BANNER-STONES

OF THE NORTH AMERICAN INDIAN

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OF THE NORTH AMERICAN INDIAN

By

BYRON W. KNOBLOCK

A specialized illustrated volume prepared for the primary purpose of putting forth conclusions regarding distribution, possible uses, methods of manufacture, evolution of types, adoption of special materials for particular types, and to establish a system for classifying the diversity of shapes of banner-stones by their lines and planes.

With articles by

PROF. CHARLES E. BROWN
DR. FAY-COOPER COLE
DR. WARREN K. MOOREHEAD
PROF. HENRY C. SHETRONE
PROF. GEORGE A. WEST
DR. WILLIAM S. WEBB

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1939

POPULAR EDITION

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1939
BY
BYRON W. KNOBLOCK

DEDICATED
TO MY WIFE,
MOTHER, FATHER,
AND BROTHER
AND THOSE TO WHOM I AM
DEEPLY INDEBTED FOR THE
ASSISTANCE AND COOPERA-
TION I HAVE RECEIVED
DURING THE YEARS REQUIRED
TO PREPARE THIS VOLUME

PLATE 1. Will County, Illinois. Material, green banded-slate. Plate 2/3 actual size. FROM THE AUTHOR'S COLLECTION

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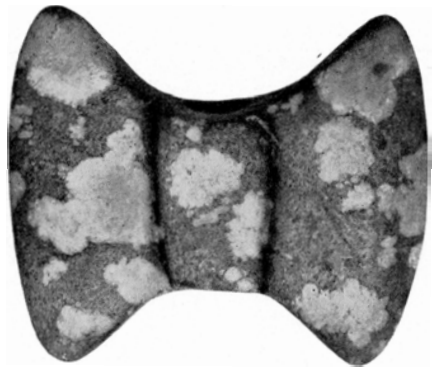

Greene County, Missouri. Material conglomerate porphyry. This specimen is also illustrated in Plate 202.

DONALD O. BOUDEMAN COLLECTION, KALAMAZOO, MICHIGAN

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Van Buren County, Michigan. Material green banded-slate.
Plate 2/3 actual size. DONALD O. BOUDEMAN COLLECTION

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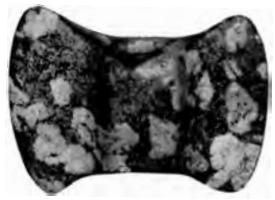

St. Louis County, Missouri. Material, porphyry.
This specimen is also illustrated in Plate 202.

SPRAGUE W. CHAMBERS COLLECTION

FOREWORD

DR. WARREN K. MOOREHEAD

It affords me much pleasure to write a brief introduction to Byron Knoblock's interesting volume on "Banner-Stones".

Many years ago I devoted considerable time, during five years, to the study and classification of problematical forms. The volume, "Stone Ornaments of the American Indians" is now out of print. Professor Charles H. Forbes, one of our leading Latin scholars, came to my Museum and inspected our types of ornamental stones. He gave us a nomenclature based on Latin terminology such as pennate, bi-pennate, lunate, ovate, spatulate, etc. It has been a mystery to me why archaeologists do not use that terminology, since it is accurate. Some of our observers still employ crude and meaningless terms, such as "spuds". The terminology advised by Professor Forbes, and based upon exact forms and variations, covered the general range of problematical forms in the United States.

I am very glad that Mr. Knoblock presented maps in colors showing distributions. It is significant that all these forms occur in central, southern and the eastern portion of the United States. They are not found in the southwest, and very few up the Pacific Coast to Alaska. I never subscribed to the theory promulgated by Dr. Gordon, or others, that they represented "whale's tails". They are most numerous in regions far from the ocean. I am convinced that the Thunder Bird theory will apply to some of them, although not all.

Future and more detailed studies in this interesting subject are recommended. I am very glad Mr. Knoblock has completed the task which he set himself and has done so in a satisfactory manner.

August 16, 1937.

Warren King Moorehead

Daviess County, Kentucky. Material, white and tan mottled quartz. This specimen is illustrated in Plate 249.

FROM THE AUTHOR'S COLLECTION

INTRODUCTION

The so-called *Banner-stones* of North America, made by the early Indians, constitute a group of stone objects that may be regarded as the most widely distributed and probably the most interesting group of the problematical forms. Of the writer's thirty-five years collecting experiences, twenty years have been devoted to the study of the banner-stones. The endless number of diversity of shapes, and the mystery surrounding these stones has influenced me in giving this subject special attention. As a result of this work the writer has developed some very definite ideas as to the distribution of the different groups of banner-stones, their possible uses, methods of manufacture, evolution of types, and the adoption of special materials for specific types. After years of study and observation the writer has established certain shaped specimens in their selected groups. Many of the highly developed designs were unclassified while others seemed to be classified very misleadingly. It is hoped that my efforts will be a forerunner for future study and better understanding of these interesting artifacts.

The specimens illustrated have been carefully selected from several thousand that are scattered over the country in museums and private collections. Every effort has been made to select the most interesting of those available, and many of the ultimate designs are outstanding.

When the idea was first conceived to prepare a book pertaining to banner-stones exclusively, it was decided that one of the most important features should be the illustrations. The writer visualized the displaying of hundreds of specimens that would show the many variations of shapes that are found throughout the eastern half of the United States. It was realized that to gather sufficient photographic material with data would be an arduous undertaking. It was not until this project was well under way that it was discovered that this task was a greater one than the writer had ever anticipated. The pictures secured for this volume re-

quired over three years of work, necessitating what seemed an endless amount of correspondence.

From the start it was resolved to show the different groups of banner-stones separately, keeping the blending forms, and ultimate designs of each group on separate plates so as not to confuse the reader. Considering the fact that photographs would be gathered from many collections, it was decided that some arrangement should be made so that when the individual pictures were assembled into groups for the illustrations, the specimens would appear in exact relative proportion to one another in size. The only way that this could be possible was to have all photographs made to the actual size of the artifacts. This greatly complicated matters and many difficult problems had to be overcome.

Each of the 1650 photographs of specimens illustrated in this volume were carefully cut out and classified in preparation for the grouping. Months of time were required for this work of arranging and mounting the cut-out pictures for the groups from which the halftone plates were made. By cutting out and mounting the photographs in this manner, the detracting shadows were eliminated as they often make it rather difficult to define the true outline of some patterns.

It is my opinion that there are but twenty-four distinct groups of banner-stones, each classified independently by having special characteristics. We can demonstrate the evolution of the different groups by beginning with the simplest forms and following their development up through the *blending forms* to the ultimate designs or *type* specimens. After a careful study of the many variations of shapes, the writer has found that the twenty-four groups developed thirty-two distinct *types*. By tracing back, through the *blending forms*, the evolution of the thirty-two highly developed *types*, it was discovered that they are directly related to eight simple *primary forms*, seven of which occur in the vicinity of Alabama, Georgia and South Carolina.

The method the writer adopted for the classification of banner-stones is based upon the similarity of lines and planes of the many variations to the basic forms. This hypothesis may be subjected to criticism, because the history of a cultural development can not safely be established merely from a typological study, without throwing together similarly shaped objects which may have had entirely separate origins. It is very probable

the banner-stones are an exception to this rule, particularly those of "Regulation Form".

Splendid research work has been done by the many museums, universities, and colleges in this country and many remarkable archaeological books have been published. Nevertheless, the writer feels, that the amateur archaeologist, and we may also include the national educational institutions, are more or less handicapped in obtaining a better knowledge of the pre-historic stone artifacts of North America, due mainly to the scarcity of properly illustrated books. From experience it appears that the amateur archaeologists are anxious to obtain books that are illustrated with many pictures of specimens that will give them the desired knowledge. But it seems that in the majority of the archaeological books pertaining to artifacts, the writers have tried to cover the entire field in one volume and by no means have given any one subject justice. We may, however, commend George A. West* on his two volumes, on pipes. Volume I consists entirely of reading matter. Volume II contains two hundred and fifty-seven plates, showing hundreds of pipes accompanied with data.

The large collections are so scattered that unless one would travel extensively it is impossible to study them. Therefore, the writer believes that not until more specialized books are published on the many different classes of artifacts, well illustrated with the outstanding specimens from the many large collections, can those interested be able to study these objects intelligently and interestingly. Some time in the near future there probably will be books of this nature that will cover the entire field.

It has been attempted in this specialized volume on banner-stones to cover the subject as thoroughly as possible, and hope is cherished that before long preparations will be begun for supplementary volumes on bird-stones, discoidal-stones, and possibly other classes of problematicals.

This work would have been impossible without the whole-hearted cooperation so willingly contributed by the many leading museums, and private collectors. It also gives the writer much pleasure to express a feeling of gratitude to Prof. Charles E. Brown, Dr. Fay-Cooper Cole, Dr. Warren K. Moorehead, Prof. Henry Clyde Shetrone, Dr. Wm. S. Webb and Prof. George A. West for their valuable articles written especially for this volume.

*West, George A.: *Tobacco Pipes and Smoking Customs of the American Indians.* Bulletin of the Milwaukee Public Museum, Vol. 17, Parts 1-2, 1934.

To the following I wish to extend my sincere thanks.

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DISTRIBUTION OF BANNER-STONES

The area in which banner-stones occur is extremely large, taking in the entire eastern half of the United States and a part of southeastern Canada. A line drawn from the western boundary of Minnesota directly southward to a point one hundred miles west of Galveston, Texas, would establish, in a general way, the western boundary for these stones. This line would include a small part of eastern Nebraska, Kansas and Oklahoma. It is doubted if any banner-stones occur west of this line. A few have been discovered in the eastern part of Kansas and Oklahoma, but the writer has not as yet observed a single specimen from the state of Nebraska, although an occasional pattern may have been found in the eastern part of this state. The northern boundary line extends from the southern part of Minnesota eastward to New Brunswick. This line would take in a small part of southern Minnesota, the southern half of Wisconsin and Michigan, the southern part of Ontario and Quebec. Banner-stones occur in the entire territory that lies south and east of these two lines, as indicated on a map of North America in Plate 2.

Within this large territory is a more restricted area in which probably sixty per cent of the banner-stones occur. This region includes the southern half of both Wisconsin and Michigan, the eastern part of Missouri, and Iowa, all of Illinois, Indiana, Ohio, the western part of Pennsylvania, and the central and western parts of both Kentucky and Tennessee. Within this area these objects reached their highest development, thus furnishing the majority of the type specimens. Yet within this territory is a smaller area that is termed the *Heart Area*, which includes the southern half of Michigan, all of Indiana, and Ohio. This *Heart Area* seems to have furnished more banner-stones than any other area. This district seems to have been more densely populated than others and would thus be responsible for the development of a higher standard of living. Naturally the more densely populated localities would furnish more of these objects.

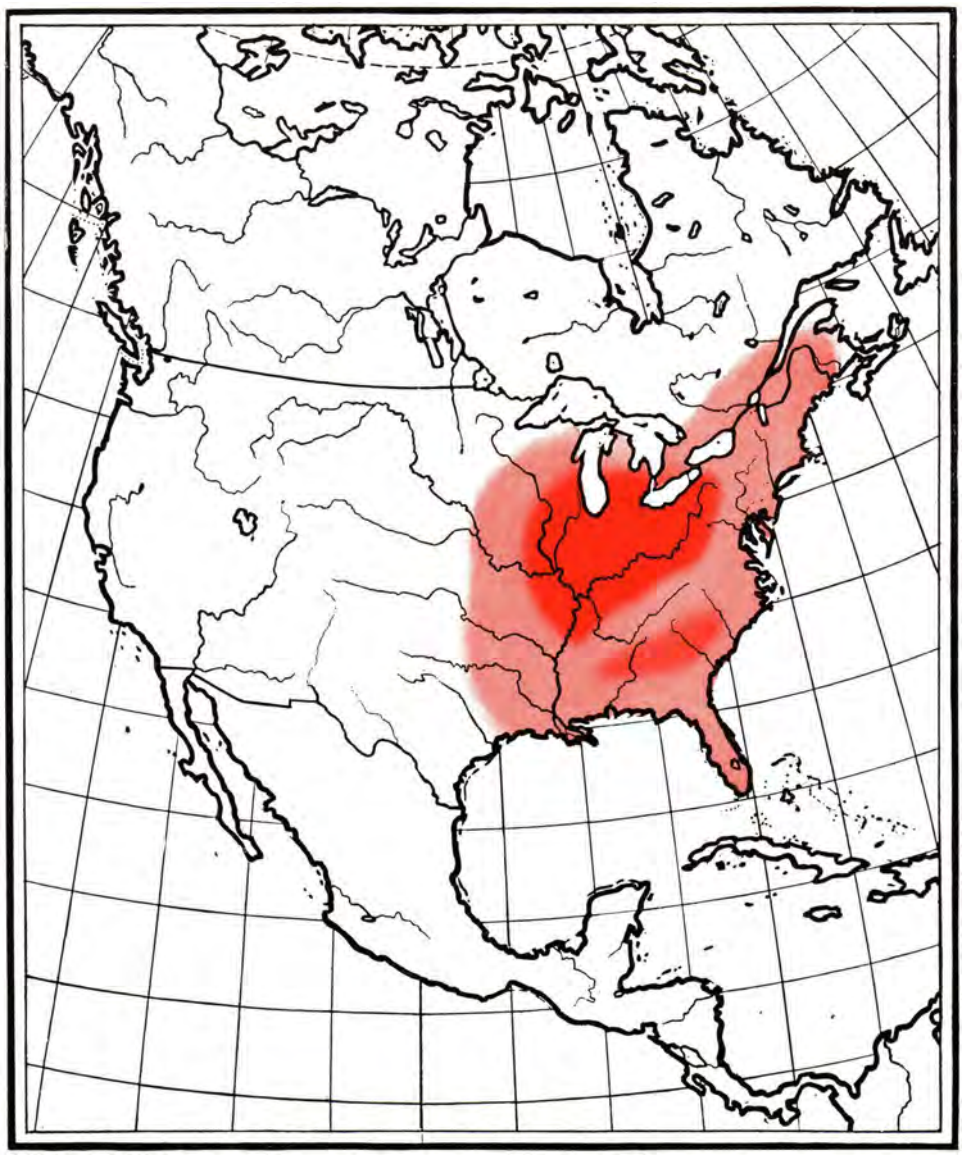

PLATE 2. Map of North America showing the distribution of banner-stones.

Light shading indicates the entire Banner-stone Area.

Medium shading indicates the Primary Area, where first banner-stones were made.

Dark shading indicates the Type Area in which the majority of banner-stones reached their highest development, and in which approximately 60 per cent occur.

Although the Heart Area is rather large, yet it is but a small part of the Banner-stone Area. It is necessary to divide the remaining territory into smaller areas and form a simple scheme by which to identify them.

Considering that the Mississippi and the Ohio Rivers and their tributaries were the main water-way routes of travel through the interior of the Banner-stone Area, and considering the vastness of their two valleys, it has been necessary to divide each of these valleys into three areas, the *Lower*, *Middle* and *Upper* areas.

For example: the cultural material, particularly banner-stones, of the Mississippi Valley are modified in shapes by evolution to the extent that those from the *Lower Mississippi Valley Area* differ from those of the *Middle Mississippi Valley Area*, and those from the *Middle Mississippi Valley Area* differ from those of the *Upper Mississippi Valley Area*.

The same scheme may also be applied to the Ohio River Valley. The Heart Area, however, in reality takes in the *Middle Ohio Valley Area*. The upper waters of this stream may be referred to as the *Upper Ohio Valley Area*, and the lower part, the *Lower Ohio Valley Area*.

The *Southern Area* extends from the lower Mississippi Valley eastward to the lower Alleghany region, and from the Gulf of Mexico northward to the *Ohio Valley Areas*. Within this vast territory is the small *Primary Area* which is illustrated in Plate 2.

The New England States comprise the *New England Area*. The territory that lies southward from this location can be divided in two areas, the *Eastern Coast Area*, and the *Lower Alleghany Area*.

Therefore, by these terms we can designate independent locations in which certain modified shapes occur.

Migration among these people was carried on so extensively that scattered specimens are found hundreds of miles away from the original areas to which they belong. For example: patterns of banded-slate that are characteristic of the *Heart Area* occasionally are discovered as far west as the Mississippi River. *Butterfly* and *Geniculate* banner-stones of banded-slate frequently occur in the state of Missouri. A beautiful *Double Crescent* found in Missouri, and the *Reel* pattern illustrated in Plate 149 found in the eastern part of Oklahoma, have been observed by the writer. Both of these specimens were made of banded-slate and were probably

made in the *Heart Area* and carried to these far-away districts. The writer also observed two *Butterfly* banner-stones of ferruginous quartz that were found in the state of Michigan. It is very obvious that these two patterns characteristic of the Mississippi Valley had found their way into an entirely different type area, far from the district in which they were made and occur.

The distribution of stray specimens is noted throughout the Banner-stone Area; and if one is familiar with the different groups of these stones and the sections of the country in which certain groups are found, one is able to recognize a stray pattern that is discovered hundreds of miles away from the area to which it belongs. When we observe or refer to certain shaped banner-stones, we quite definitely picture them as belonging to certain areas in which they most abundantly occur or where the different designs developed.

An idea of the extent of migration may be gathered from the large obsidian blades found in the Hopewell Mounds in Ross County, Ohio, by Dr. Warren K. Moorehead* in 1891. The material from which these ceremonial blades were made was obtained either in the vicinity of Yellowstone Park or Mexico; a more accurate belief in my estimation is that the material was secured in Mexico. A great quantity of copper relics were also found in these mounds, and it is certain that this material was secured either in the northern part of Wisconsin or Michigan. Many of the ornaments that were present were made from mica and chlorite, materials that were evidently secured from the vicinity of South Carolina.

The large dippers, gorgets, beads and other ornaments that were made from the conch or busycon, pyrula, whelk and other sea shells that are found in many of the mounds throughout the Mississippi and Ohio River Valleys, were secured by the Indians from the Gulf of Mexico. It is well to note that although Wisconsin and Michigan have furnished the material and the majority of the copper relics, yet knives, celts, and spearheads made of copper frequently are found as far south as Tennessee. Therefore, when we consider travel and trade, we can also easily account for the stray banner-stones that occur hundreds of miles away from the specific areas to which they belong and were made.

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*Moorehead, Warren K.: *The Stone Age of North America.* Boston and New York, Houghton Miffin Co., Vol. I, 1910.

For many years the ear-spools and other ornaments made of silver that were taken from the Hopewell Mounds in Ohio have attracted considerable attention. It is but another example of a material carried from a far destination. In 1926 the Dickson brothers, Ernest and Marion, discovered 120 solid silver beads arranged about the neck of a skeleton in a mound close to the bank of the Illinois River in Fulton County, Illinois near Liverpool. This interesting find is fully described by Dr. Fay-Cooper Cole* and Dr. Thorne Deuel* in their latest publication, *Rediscovering Illinois*, as coming from mound F–77. The writer shall refrain from describing where the Indians secured the silver, but shall quote part of the contents of two letters from Claude U. Stone, of Peoria, Illinois, which were received by the writer prior to the publication of the volume mentioned above, quoted as follows:

"Peoria, Illinois, March 1, 1937

Dear Mr. Knoblock:

Yesterday I was over to see the Dickson Bros. Ernest told me that you had written to him concerning silver beads that were found in a certain mound at Liverpool. I now possess those beads. Under separate cover I am mailing a photograph that Marion Dickson had made of them. The three small separate groups of beads in the photograph still have the original fibre cord through them.

The presence of copper tinge was somewhat of a puzzle at first. Some thought the beads must be made of German silver but they are not—they are of native silver. Last summer I solved the problem to my own satisfaction and to the satisfaction of several others to whom I have shown the explanation. While I was out at Copper Harbor on the Upper Michigan Peninsula I obtained a number of mineral specimens that up there were called "half breeds". The specimens consisted of one or more nuggets of silver in conjunction with native copper. These are found in the upper strata of the ground in the copper mining areas of the Upper Peninsula and Isle Royale—that is they are found from the surface down in places to a depth of twenty-seven feet. There is where the Indians went for their copper. There is where they obtained the small quantity of silver that they used. Being in conjunction with copper there was quite sure of being specks of copper in the finished silver product. Through the long years the copper was oxidized and the present appearance of the silver beads is the consequence.

I will see that you get to examine them and also get a full description of the mound and the circumstances of the find.

(*Signed*) *CLAUDE U. STONE*"

*Cole, Fay-Cooper: Deuel, Thorne: *Rediscovering Illinois*, Chicago, Illinois, The University of Chicago Press, 1937.

"Peoria, Illinois, March 5, 1937

Dear Mr. Knoblock:

I am today mailing to you the beads of native silver found in a Fulton, Illinois, County Mound. Dr. Deuel of the University of Chicago along with Dr. Fay-Cooper Cole numbered the mounds of Fulton County. I have waited to write up the history of these beads in order to consult Dr. Deuel's book which is supposed to be out about April 1. That will give the number of the mound.

Also, I am sending an example of the "half breed"—nuggets of native silver in conjunction with nuggets of native copper—which furnished the prehistric artisan his supply of silver. The presence of a little copper with the silver accounts for the greenness of the beads when found although other copper was not near. The "half breed" sent to you has been cleaned of the sulphide which covered it when found and efforts have been made to pound loose and otherwise separate a nugget of silver but it illustrates nevertheless the condition in which silver was found by any primitive man who used it.

(*Signed*) *CLAUDE U. STONE*"

PLATE 3.

Number 1 shows 105 of the 120 solid silver beads found by the Dickson brothers—(Ernest and Marion), in a mound close to the banks of the Illinois River in Fulton County, Illinois, near Liverpool. The Indians secured nuggets of silver in the Lake Superior Region, and by hammering, they were made into bars and rolled into beads. Note the twelve beads that are still in tact on the three short stands of the original cord.

Number 2 shows a "half-breed" nugget from Copper Harbor, excavated at the Upper Michigan Peninsula. Note the nugget of silver imbeded in the larger nugget of copper.

Plate ½ actual size.

FROM THE COLLECTION OF CLAUDE U. STONE, PEORIA, ILLINOIS

USES OF BANNER-STONES

The prehistoric relics of the mound-building people of the eastern half of the United States furnish remaining evidence of very interesting cultures. The skilfully carved effigy pipes, bird-stones, banner-stones, and other relics show remarkable workmanship that display an art of beauty and simplicity of design surprisingly similar to the so-called modern art of today. Yet our modern artists contend that they have created something new.

The scattered village sites and mounds provide implements made of stone, bone, copper, pottery, and shell that give us a fair idea of their mode of living. Wood unquestionably was used for many purposes by these Indians, but, due to the ravages of time, these articles have disappeared; yet an occasional preserved object made of wood is discovered in a dry cave or mound.

These relics can be definitely classified, determining their agricultural implements, cooking utensils, hunting and warfare weapons, and ornaments for adornment. Yet there are problematical forms that cannot be connected with any practical uses, and while banner-stones come under this heading, there is no doubting that they were of vital importance to the Indians who made them. The great number of modified patterns and wide range of distribution indicate that banner-stones were the most popularly adopted tribal or ceremonial symbols of the problematical forms.

The name *Banner-stone* is popularly applied to this large group of stone objects on the supposition that they were mounted on staffs as ceremonial banners, wands, and maces, and were used in various tribal, social, and religious ceremonies of the prehistoric Indians.

Because the construction of banner-stones in general is so fragile we fail to find any reason even to consider the possibility of their possessing any utility. The archaeologists and the collectors with whom the writer has come in contact seem to have the same general belief. The high

degree of workmanship, refinement of lines, and the time and patience required in the making of some of the highly specialized specimens is another reason to believe that these stones were made for ceremonial purposes.

It is very probable, however, that the early made and simple shaped banner-stones that occur in some of the southern states were of an ornamental origin. Later, as the popularity of these stones increased and the making of them spread, other shapes were developed and improvements were made, until they were finally adopted and deemed as sacred ceremonial symbols. Though this statement may be hypothetical, it should be given ample consideration, especially in view of the fact that the earliest forms were but small perforated water-worn pebbles.

While it is very probable that some of the perforated pebble forms were also mounted on staffs, the majority of them are so small and seem so insignificant that the writer cannot visualize them as ceremonial symbols. Although we may regard the small perforated pebble forms as banner-stones, we may believe that they were not so important to the Indians at that time as the more elaborately designed and more skilfully made banner-stones that developed later. But to adopt this conclusion the writer has found it necessary to place a dividing line that would separate the early banner-stones of apparently no ceremonial significance from those of a higher plane that were adopted as ceremonial symbols. Therefore, it is my belief that a dividing line of this nature should be established, and placed just prior to the *primary forms*. The fact that a great percentage of the *primary forms* show broken-out portions at the ends of the perforations is a convincing proof that these early designed banner-stones were mounted on staffs, and probably used ceremonially.

The actual uses of many of the other classes of problematical forms have not been fully determined, but are usually referred to as ceremonials; so it seems that this term is a favorite means to give such artifacts a name. Discoidal-stones, bird-stones, boat-stones, spatulates, and large axes and celts that weigh twelve or fourteen pounds or more and too large for convenient use, are some of the artifacts that are commonly referred to as ceremonials. Probably these were used ceremonially, but in an entirely different manner from the banner-stones.

Amazing was the amount of paraphernalia used and physical energy employed by primitive races in different parts of the world, purely for their

tribal and religious ceremonies. The ceremonial festivals of our present day Southwest and Plains Indians is a striking example of primitive customs still practiced. We may surmise, therefore, that the ceremonial festivals of the prehistoric Indians were even more colorful and mystifying than those of the present day. But whether or not the prehistoric ceremonies were held more frequently than those of present tribes, we cannot say. Judging from the enormous amount of material that has been taken from some of the mounds, we are certain that some of the ancient ceremonies were carried out on a stupendous scale.

There is no doubting that the greater part of the tribal, wartime, and religious ceremonial paraphernalia used by the Indians centuries ago consisted of large banners and symbolic emblems that were fashioned mainly from wood, feathers, and other perishable materials that have disintegrated and disappeared. The banner-stones, being of stone, are but a small part of this sort of ceremonial equipment that has been preserved.

Although these objects are regarded as ceremonials, it is possible that many of them were also worn, serving an ornamental purpose as well. To analyze this point we must study the construction of the many different patterns. The extremely curved *Pick* and *Knobbed Lunate* banner-stones that resemble a pair of horns, possibly were worn on some sort of head-dress ornamentally. This is a very good theory and a very logical one. Even though worn on head-dresses as ornaments, it is very plausible that these patterns were of a ceremonial nature, and on other occasions were removed and placed on the ends of staffs, and carried as ceremonial symbols. One of the twelve beautifully made *Knobbed Lunate* types found broken in a mound in Madison County, Illinois, is illustrated in Plate 4.

The ceremonial breaking of specimens or *killing*, as it is termed, was extensively practiced, probably to prevent objects being stolen from the burials by irreverent persons for their own use. Another possible reason for the ceremonial breaking or *killing* of specimens was the belief that by breaking, the spirit of the objects (whatever they may be) would be released and could then join the deceased in the Happy Hunting Grounds.

The very remarkable discovery at Woodriver, Illinois, of the twelve *killed* banner-stones indicates that these particular specimens were ceremonially buried. One may gather the importance of this ceremonial custom, practiced by the prehistoric Indians, if we study the vast amount

of broken material that was taken from the famous Tremper Mound in Scioto County, Ohio, by Prof. Henry Clyde Shetrone*, and also the remarkable Temple Mound in Le Flore County, Oklahoma. Hundreds of broken pipes were found in each of these mounds together with great quantities of other miscellaneous material that were destroyed by fire, and ceremonially *killed* for their intended sacrificial purposes. Although a vast amount of material was taken from these two mounds, it is interesting to note the absence of banner-stones. This fact helps to substantiate the theory that these objects were tribal symbols rather than individual possessions. See pages 74 and 565.

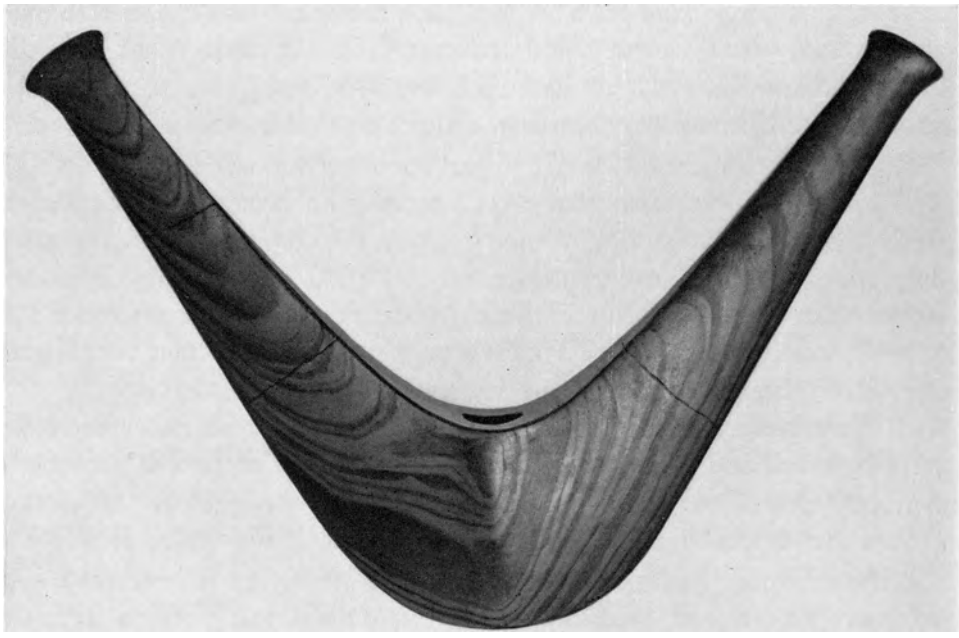


PLATE 4. Knobbed Lunate. There were twelve of these type specimens, each identically alike, found in a mound at Woodriver, Illinois, on the Standard Oil Company's property while excavating for one of the large storage tanks. All twelve specimens were broken in four to eight pieces and all pieces were present, together with eight copper axes and skeletal remains. It is very evident that the twelve banner-stones that were broken or *killed*, were ceremonially buried. The size of the specimen illustrated, is 7 inches wide. Plate 5/7 actual size. FROM THE COLLECTION OF DR. P. F. TITTERINGTON, ST. LOUIS, MO.

*Shetrone, Henry Clyde: *The Mound Builders*, New York City, N. Y.; D. Apppleton and Company, 1930.

PROBABLE ANTIQUITY

It is the general belief that the Indians of North and South America are of Asiatic origin, entering Alaska and following a course southward along the Pacific Coast. The surprisingly large number of stone objects that are found along the Western Coast from Alaska to South America give proof of this fact. While it is difficult to determine definitely the time the earliest invasion took place, we can safely say that it was many thousands of years ago. Prof. Ernst Antevs* in one of his latest publications has explained his views on the subject in a very convincing manner.

"According to the best of our belief . . . the first man to arrive in North America was of modern type and probably of the Neolithic state of culture. He came from Northeastern Asia to Alaska and probably spread along the Eastern foot of the Rocky Mountains where an ice-free corridor had formed some 20,000—15,000 years ago. He seems to have reached the Southwest at the age of transition between the pluvial and the post-pluvial epochs, roughly 12,000 years ago. Reported older finds need verifications."

The finding of the *Folsom points* at Folsom, New Mexico, a few years ago by Dr. Barnum Brown, that were associated with bones of extinct species of bison and other Pleistocene mammalian remains, is a convincing bit of evidence that man had lived in the Southwest in Post-Glacial times. These points are remarkable because they represent the oldest known type of projectile in North America. Since this noteworthy discovery, other finds have been made in different sections of the Southwest that help to substantiate the find at Folsom, New Mexico. To what extent the *Folsom man* had traveled from the Southwest can only be traced by future findings. Evidence of his existence, however, has been observed in Texas, Kansas, and other states that are considerable distances from New Mexico. Since so many of the true *Folsom points* have been found in the Southwest

*Antevs, Ernst: *The Spread of Aboriginal Man to North America.* New York City, N. Y. Geographical Review, Vol. 24, 1935.

and under the conditions mentioned, these ancient flints with the longitudinal fluting or groove cannot be mistaken, nor can we classify or connect in any way the fluted points, knives or spear-heads that are found on the surface throughout the eastern half of the United States with the Folsom points. It is obvious that while the numerous fluted flints found on the surface have a certain amount of resemblance to the ancient Folsom points, they were made by Indian cultures of much later dates.

The writer wishes to mention an interesting discovery made one mile north of West Kimmswick, Missouri, during extensive excavations for mastodon bones more than thirty years ago. Two chipped flints were found some ten or twelve feet below the original surface at the base of a slope in a glacial deposit that consisted of a profusion of mastodon bones and other remains of prehistoric animals, embedded in gravel and blue clay.

One of these flints at this time is valuable scientifically. This specimen is of brownish flint, one and three-fourths inches in length, and is fluted on both sides half the length, very similar to some of the Folsom points that were found at Folsom, New Mexico, and which are illustrated in one of Dr. Edgar B. Howard's* latest publications. The other flint is barbed and is two and one-half inches in length. When the first flint was discovered it was left at the original place where it had lain, and word was sent to Dr. W. F. Parks of St. Louis, Missouri, who at once hastened there to make a thorough investigation of the find. Later the other flint was found under the same condition. Dr. Parks secured both specimens and some eight years later presented them to the writer. Considering the condition under which the West Kimmswick, Missouri flints were found, and the fact that the one fluted point corresponds so perfectly with the Folsom points from New Mexico, it is very plausible that it is a true Folsom point; and if this is true, Folsom man had also lived in the lower Mississippi Valley.

In 1931 the writer presented these two interesting specimens together with a diagram drawing of the location and an affidavit signed by Dr. Parks covering this find in detail, to The Field Museum of Natural History, Chicago, Illinois, where the one Folsom point is now on exhibition in the Anthropology Section under Catalogue No. 205526. The catalogue number of the other specimen is 205527. By permission of The Field Mu-

*Howard, Edgar B.: *Evidence of Early Man.* Philadelphia, University of Pennsylvania, University Journal, Vol. 24, 1935.

seum of Natural History, the contents of a letter from Dr. Parks to the Museum verifying this discovery is quoted as follows:

"St. Louis, Missouri, October 1, 1931

The excavations near Kimmswick, Missouri, were carried on about 1903 to 1907. The flints I gave Mr. Knoblock were found associated with the bones of mastodon, horse, Equus Complicatus, and ground sloth, Megalonyx, and other bones of prehistoric animals. I visited the place very often during the excavation.

(*Signed*) *W. F. PARKS*"

There may be differences of opinion in regard to the early inhabitation of the lower Mississippi Valley. There is the possibility that early man had also entered this region from the Northwest, by following the course of the Missouri River. While this may be true, there still remains much to be done in the way of research, to establish evidence of this route of travel before this idea is proved. We may speak, however, with a certain amount of certainty when we say that Folsom man had migrated from the Southwest to the lower Mississippi Valley.

In view of the fact that man had invaded the Southwest and presumingly the Mississippi Valley some 10,000—12,000 years ago, it is reasonable to believe that at more recent dates far more extensive invasions took place from Mexico to the Southwest and the lower Mississippi Valley. It is certain that early man had migrated as far south as South America, and while it seems that no exceptionally high cultures were developed in the Southwest or lower Mississippi Valley, it is very evident that the Inca and Mayan cultures that developed in Peru, Ecuador, Colombia, Honduras, and Guatemala, reached a high degree of semi-civilization that flourished apparently for several thousand years. It seems that some of the Mayan people from Central America later migrated north in quest of new territory and established in Mexico the Aztec, Toltec, Zapotec, and Mixtec cultures.

Personally the writer believes that Folsom man probably had lived in the lower Mississippi Valley in Post-Glacial times, and people from Mexico at much later dates invaded this region, either by following a route along the Gulf coast, or by a northeast route overland. It is certain, however, that the States of Mississippi, Alabama, Georgia, and South Carolina constitute the territory that was first occupied by Indians of higher cultures east of the Mississippi. Mounds in Georgia have yielded im-

plements and ornaments made of stone and copper and other materials that show the influence of Mexican cultures, some of which were made in Mexico and carried from there by these wandering people.

The early movement of people from Mexico to the lower Mississippi Valley, occurred probably several thousand years ago, but the exact time has not as yet been definitely determined. The age of the basket makers of the Southwest is estimated at some 2,000 years ago, and according to A. E. Douglas* the early Pueblo or Cliff Dweller cultures ceased to exist some 700 to 900 years ago.

H. Newell Hardle† describes in one of his publications—*The Ancients of the Bow of Tennessee* — a copper plate which he referred to as the "*eagle man*", that he found in a mound at Henry Island, Alabama. This ornament wrought out of thin copper in a relief decorative design shows a profile of a man's head with an elaborate head-dress, and displaying ear-spools at the side of the head, which are typical of those worn by the prehistoric Indians of Mexico. The art displayed on this copper plate corresponds to the ancient art from Mexico and Central America. This interesting find, as well as others, have frequently been observed in scattered sections of some of our southern states.

Clarence B. Moore‡ described and illustrated in one of his volumes a highly polished monolithic hatchet that was found near the Black Warrior River at Moundville, Alabama. Dr. Warren K. Moorehead° also illustrated this specimen, and quoted Prof. Moore in *Stone Age of North America* volume I. Moore's description of this discovery is quoted as follows:

"Some years ago, a colored man, ploughing near one of the larger mounds at Moundville, found a superb hatchet and handle carved from a solid mass, probably amphibolite, and highly polished. This hatchet was procured by Mr. C. S. Prince, from whom it was obtained by the Academy of Natural Sciences.

"The hatchet, 11.6 inches in length, with a neatly made ring at the end of the handle (not clearly shown in the reproduction), resembles, to a certain extent, the one found by Dr. Joseph Jones, near Nashville, Tennessee, and described and figured by him. C. C.

**The Secrets of Southwest Solved by Talkative Tree Rings.* A. E. Douglas, National Geograghic Magazine, Vol. 56, Dec. 1929

†Hardle, H. Newell: *The Ancients of the Bow of Tennessee,*

‡Moore, Clarence B.: *Certain Aboriginal Remains, Black Warrior River (Moundville).* Philadelphia Pa. The Academy of Natural Sciences, 1905.

°Moorehead, Warren K.: *The Stone Age of North America* Boston and New York. Houghton Mifflin Company. Vol. 1, Fig. 288, Page 327, 1910.

Jones describes and figures this same hatchet, and speaks of the finding of another exactly similar in South Carolina.

"Thurston also describes and illustrates the Jones hatchet, and refers to the South Carolina speciman, and to still another, somewhat ruder in form, as coming from Arkansas.

"It is interesting in this connection to note the presence of "celts" with stone handles in Santo Domingo, though these hatchets are much inferior to the specimen from Moundville.

"The monolithic hatchet from Moundville seems to be much more beautiful than the one discovered by Doctor Jones, for it leaves nothing to be desired as to finish, and the graceful backward curve of the part of the handle above the blade seems more artistic than the form of the corresponding portion of the Jones hatchet, which is straight."

The writer wishes to mention this hatchet because of the fact that it carries much importance when arriving at a conclusion as to how it happened to be there. The monolithic hatchets that have previously been discovered and described by eminent archaeologists have been found east of the Mississippi River with the exception of the one from Arkansas that Thurston described. We cannot say that the monolithic hatchet found in Alabama was made in Central America or Mexico, and later carried to Georgia, but it is very plausible that this find is directly connected to these cultures, and establishes a most convincing evidence of invasions from Mexico.

Another noteworthy discovery was made in 1936 when commercial diggers discovered four monolithic hatchets in the Temple Mound in Le Flore County, Oklahoma, located eighteen miles south of Fort Smith, Arkansas. These four specimens are made of a greenish gray compact sandy shale, a material that is believed to be local, and therefore it is possible that these hatchets were made at this locality. Plate 5 illustrates these four interesting objects.

Note that Nos. 1 and 2 are very similar in design to the one found at Moundville, Alabama, while Nos. 3 and 4 are different in design from any so far discovered. The size of these artifacts are given as follows·

No. 1, 11¾ x 5⅞ inches.	No. 2, 13¼ x 6⅜ inches.
No. 3, 13¾ x 6½ inches.	No. 4, 15 x 6½ inches.

Note that No. 1 shows disintegration. The other three remaining specimens are covered with a heavy rusty color iron deposit. Specimen No. 2 is larger and even more beautifully designed than the one from Moundville, Alabama.

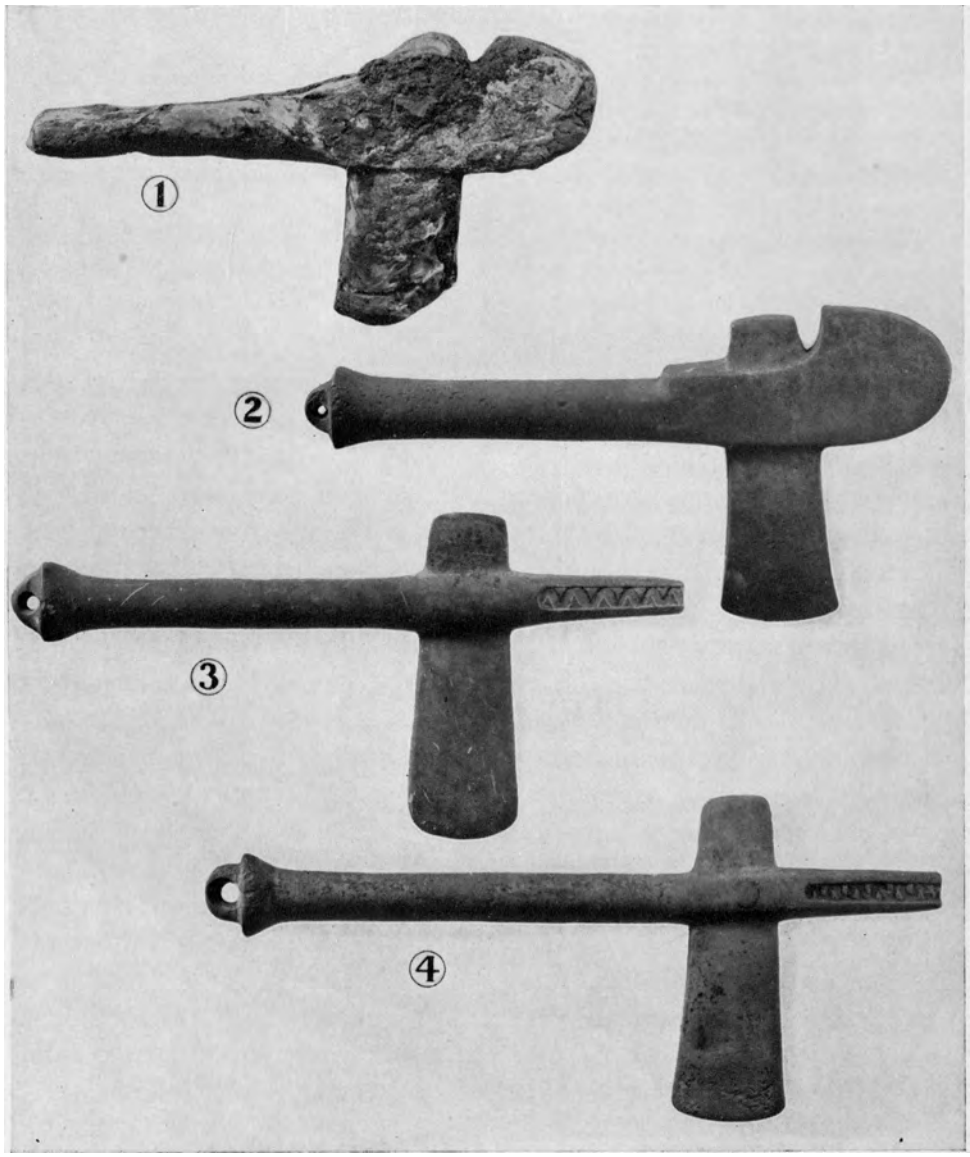


PLATE 5. Monolithic hatchets found in the Temple Mound in Le Flore County, Oklahoma, by commercial diggers in 1936. Material is a gray compact finely grained sandy shale, covered with a rusty patina. No. 1 and No. 2, are very similar in design to the one found near Black Warrior River, at Moundville, Alabama, that is illustrated and described by Clarence B. Moore and Warren K. Moorehead.

Plate 1/4 actual size. FROM THE COLLECTION OF CLAUDE U. STONE, PEORIA, ILL.

The monolithic hatchets found in Le Flore County, Oklahoma, and similar hatchets that were found in Alabama, South Carolina and Tennessee form a difficult problem to solve. Considering that the specimens from the two widely separated localities correspond, they are cultural links associating the two localities, and we may arrive at a conclusion, therefore, that Indians who made the Alabama specimen may also be responsible for those buried in the Temple Mound in Oklahoma. There is, of course, the possibility that the people who buried the four specimens in Oklahoma might have traveled to Alabama and are responsible for the one found there, also those from South Carolina and Tennessee. We must realize, however, that originally these ceremonials were developed by cultures from Central and South America, and that the monolithic hatchets found in the two widely separated territories may be accounted for by separate invasions from Mexico.

The great quantity of copper relics that were found in the Temple Mound were probably brought from Mexico, or the material was at least secured there. The great number of conch shell dippers that were taken from this mound were elaborately engraved with symbols of the sun, serpent, human figures, and other designs that are indeed typical of the ancient art that is found in Mexico and Central America.

After considering the problem from these angles, the writer is inclined to believe that the people who lived in Alabama and who are responsible for the monolithic hatchet found at Black Warrior River had at some time wandered westward to Oklahoma and are responsible for the four similar specimens taken from the Temple Mound. The writer arrives at this conclusion mainly because of the presence of the large sceptre made from Tennessee flint found in the Temple Mound; illustrated in Plate 6.

It is interesting to note that monolithic hatchets have been found in Santo Domingo and in South America. It is even more interesting to know that ceremonial sceptres made from a solid mass of stone have been found in Columbia, South America. Therefore, we can form a cultural connection of these interesting specimens from South America with those similarly found in the Southern Area of North America. Although the sceptres from Columbia were carved from a solid mass of stone, and those found in Tennessee were chipped from flint, they are still similar in design. It is very probable that the monolithic hatchets and also the sceptres from

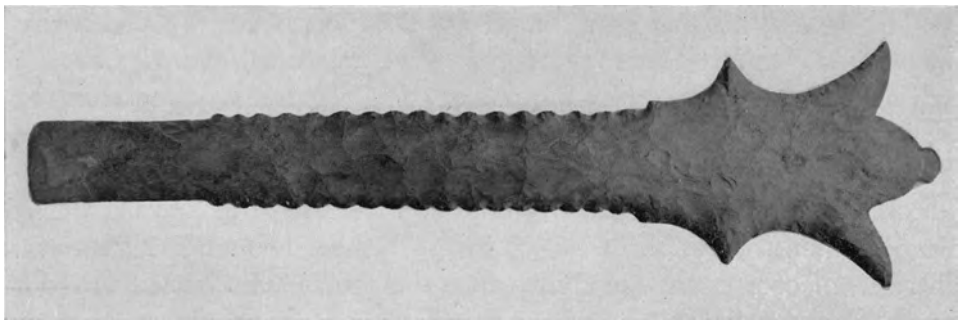


PLATE 6. Flint sceptre found in the Temple Mound, Le Flore County, Oklahoma in 1936. Material is brown Tennessee flint. It was apparently made in Tennessee and carried from there to Oklahoma. It is believed that this superb specimen which is very similar to numerous other sceptres from Tennessee, is the largest and finest so far discovered, and the only one of this type with a serrated handle. Length 20 inches, width 5½ inches.

Plate 1/5 actual size. FROM THE COLLECTION OF JOHN MAFFENBEIER, NEWARK. N. J.

these two widely separated territories were used in the same ceremonial manner. There is no doubting that a cultural connection can be formed between these objects found from Central and South America and those found in North America.

Judging by the vast amount of material taken from the Temple Mound, much of which was brought in from great distances and from many directions, it seems that at some time this district was a center or meeting place for stupendous ceremonial activities. Is it not natural then to assume that if Indians from Tennessee had gone to Oklahoma for these ceremonial occasions, that others from Alabama had also gone there? This idea alone substantiates beyond a reasonable doubt that the monolithic hatchets from the two areas are directly associated.

Although the monolithic hatchets, and the ceremonial flint sceptres may not seem to have any direct relation to banner-stones, it is certain that if they were present with these superb specimens which seemingly were made by early cultures, it would be interesting. Although no attempt will be made to place an age on the Temple Mound, the writer has seen enough material that was taken from this mound to be convinced that the culture which flourished at that time was a highly developed one. It is very obvious that by a careful study of the crudeness of the early perforated pebbles and the simplicity of design of the primary forms of banner-

stones, one may arrive at the conclusion that they are far older than the beautifully made flint sceptres from Tennessee or the monolithic hatchets.

While the Temple Mound has furnished far more material than has ever been discovered in any other mound, there was not a single banner-stone present. At least the writer at this time is not aware of any being found. It will always be regretted that this mound was not opened in a scientific manner.

Although one can only guess the age of the oldest banner-stones, one may assume that some of them are at least many thousands of years old, and it is possible that many are as old as any artifacts that are discovered east of the Mississippi River, with exceptions, of course, of any evidence of the Folsom man or any other Post Glacial primitive people. It seems very obvious that the simple primary forms are the oldest problematical forms found in the eastern half of the United States.

It was from the early inhabited Southern Area that the Indians worked their way up the Mississippi River, and north through Tennessee and Kentucky, by following the course of the Cumberland, Tennessee and Green Rivers, and gradually up the Ohio River Valley. Other individuals traveled northward along our eastern coast to the New England states. Eventually the entire eastern half of the United States and the south-eastern part of Canada were occupied by these people.

It is the general belief that the making of banner-stones ceased in pre-Columbian times; and if, however, some of them were made after Columbus discovered America, the making of them was not carried on very long thereafter. When we consider that these stones are so widely distributed, and also the time it must have taken for the vast area in which they occur to become inhabited, one has reason to believe that the cultures which made them, flourished for many centuries.

The only written history concerning the pre-Columbian people of America is a few records by early explorers; yet there seems to be no written information concerning banner-stones. If, however, the aborigines did make or use these objects at that time, the early explorers failed to mention anything about them in any of their writings; and the Indians of the present day are unable to throw any light on the subject although many of the tribes, as well as other primitive races in different parts of the world, still preserve traditions and legends that extend into

the past 200 to 300 years. Yet no legends exist among the Indians today concerning banner-stones, and had any legendary knowledge of them ever existed, it has been lost.

The question may arise as to just how one can distinguish a banner-stone of extreme age from one of a comparatively recent period. Many of the specimens from the Southern Area are badly disintegrated, or show pronounced patina. Yet, occasionally, specimens that are found farther north also show considerable age. One cannot attempt to arrive at the age of banner-stones by the amount of disintegration or patina alone but rather by a careful analysis of the shapes and the locality in which these objects occur. The materials from which certain patterns were made usually have a great deal to do with the ageing of them, as well as the conditions under which they are found. Specimens that are made from a soft or a porous material will more readily disintegrate or absorb the mineral matter that is in the ground than will those that are made of a hard compact stone. A polished quartz specimen will show comparatively no patina or weathering, while another one made of some softer material and made at the same period of time will disintegrate or absorb the minerals and chemicals in the soil, which will give it an aged appearance. The soil itself has a great deal to do with the ageing, for some soils contain more mineral matter than others. Many of those which have lain in a soil that contains very little depositing mineral matter will show very little patina; while others made in the same period of time and of the same material which have lain in a soil rich in mineral matter will have a more aged appearance.

Plate 7 shows a specimen dredged from the Illinois River which illustrates very vividly the appearance of being extremely old. This badly disintegrated object found under this condition obtained its aged appearance more readily and more rapidly by the abrasive power of sand and water than the ordinary elements could produce on surface finds. Furthermore, while this pattern is not a highly developed type, the design is not of the simplest lines. Therefore, one may believe that it was made in the middle of the Banner-stone Era.

Plate 8 illustrates another very interesting specimen, that at a glance has also the appearance of remote antiquity. But, upon observing it more closely, one can note that it is made along highly developed lines,

with thin wings and displays remarkable workmanship. While this pattern does not conform to the highest stage in the evolution of this *Butterfly* design, which are those that have the double-notches, it is but one step removed from it. See Plate 41, page 132.

The lime deposit on the one side evidently is the side that lay next

PLATE 7. Jersey Co. Illinois. Rectangular Barreled form, characteristic of the Middle Mississippi Valley Area. This specimen was dredged from the Illinois River at the mouth of Otter Creek, located sixteen miles above the mouth of the Illinois River. Material, hard dark brown porphyry, highly polished with cavities caused by the disintegration of the spots that were of a softer material. Size $3\frac{7}{8}$ x 2 inches.

Plate actual size. FROM THE AUTHOR'S COLLECTION

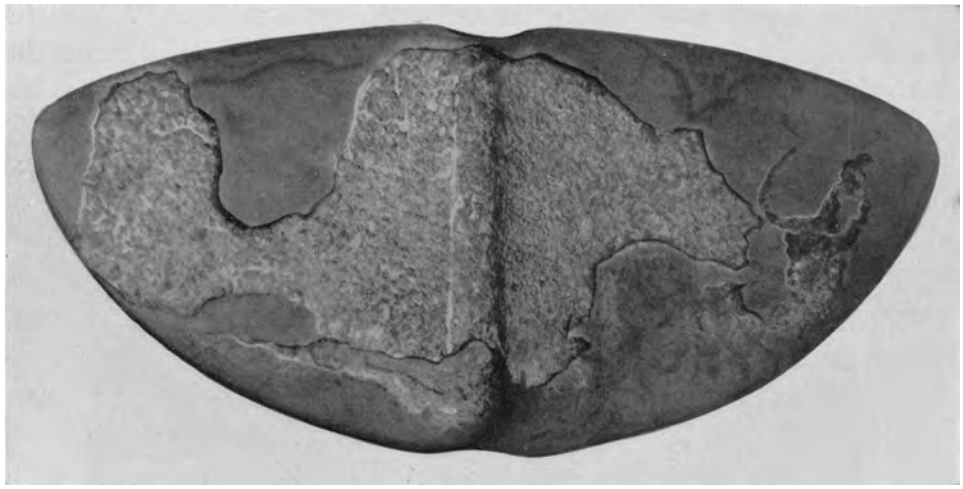


PLATE 8. Greene County Illinois. Un-notched Butterfly form. One side of this specimen is heavily encrusted with a lime deposit. Material, banded-slate, cut parallel to the black bands. Size 6½ inches.

Plate 2/3 actual size.

FROM THE COLLECTION OF DR. P. F. TITTERINGTON, ST. LOUIS, MO.

to the ground and indicates that the soil on which it rested contained a great quantity of lime and mineral matter. We may place an estimated age on this particular pattern of but a few hundred years, perhaps. Because of the fact that it is so highly developed, regardless of its aged appearance, we know that it was made sometime prior to the end of the Banner-stone Era. A lime deposit similar to this could occur in a comparatively short time under certain favorable conditions.

Therefore, the writer is convinced that the only way we can determine the ages of banner-stones is by classifying the shapes of specimens by the the *A, B, C system*. This system will be introduced and thoroughly described in the chapter *Evolution of Types*. Although we are unable to place the age on these stones in years, we can at least arrive fairly accurately at what period of time in their evolution certain shaped patterns were made. It seems very apparent that the early made perforated pebbles and primary forms from the Southern Area are the oldest. The type specimens that developed farther north were made in the latter phase of the Banner-stone Era, and are therefore the most recent.

ORNAMENTAL USES OF BANNER-STONES

Over a period of years, numerous theories have been advanced for the uses to which the Indians put the banner-stones, their supposed importance, and how certain shapes originated as copies of the European holed axes. Other frivolous concepts, such as effigies of the tail of the whale, have been associated with other shapes. In many of the older publications that refer to these artifacts, the writers had dwelt on the subject but vaguely. In fact, at one time it was thought that these objects did not occur any farther west than the state of Ohio. But since these early books were written, much has been learned about them. A great number of the banner-stones that have since been discovered consist of various designs that the writers at that time did not know existed. Therefore, many of the old theories concerning these artifacts can be disregarded. It seems that at this time there is but one theory pertaining to their purpose or uses that has survived, the theory that they were tribal symbols, ceremonially used. At least this seems to be the general belief.

While it is very apparent that the custom was to place these symbols on the ends of staffs to be used ceremonially, it is believed that they were also adjuncts to ceremonial head-dresses; yet the writer believes that one can consider the possibility that the greater part of them were used ornamentally in other ways without detracting from their ceremonial significance.

It may seem unnecessary to relate some of the theories that previous writers have put forth, and which many archaeologists are familiar with; but it is necessary to do so in order to make clear the reasons why one can at this time adopt certain views on the subject. Although it may seem difficult to form definite conclusions, one can at least separate and analyze the fundamental meanings of the different theories, and by doing so, make it much easier to point out which theory seems to be the most logical one. Regardless of what views on the subject are adopted by

those who are interested, they all seem to be associated more or less with ornamental uses.

A favorite theory is that banner-stones were insignias of rank to denote official authority of the chiefs, medicine men, shamans, and priests. In connection with this same theory it may be supposed that certain shaped patterns represented the chief's rank, other patterns the medicine-men, shamans, and priests. Possibly certain designs were issued to braves who had performed some important feat, much in the same manner that we issue medals to heroes today. This theory leaves one with the impression that these artifacts were but individual possessions. The writer disregards this theory for that reason, and also because of the fact that if these stones were but individual possessions, they would occur more frequently in mounds.

A more plausible theory, that seems at this time to be the most popularly adopted one, is that banner-stones were tribal symbols, which were used ceremonially and were only in the possession of those of authority. While this theory may seem directly associated with the previously mentioned theory, at least to the extent of possessorship, it is entirely different, for it places these artifacts on a higher plane. We may surmise that these symbols were highly prized, protected, and were regarded with reverence by the whole community. Judging from the fact that certain areas furnish differently shaped banner-stones, it is but natural to assume that the widely scattered villages and tribes were makers of different shaped tribal symbols. The fact that they so seldom occur in mounds is another reason to believe that they were tribally owned and were withheld from burials and were handed down from one person of authority to another.

Although many theories have been advanced, the subject is still open for further discussion, and at this time the writer will take the liberty to express his opinion on the subject as follows:

First, it seems that the evolution of banner-stones is a very important point to consider in arriving at conclusions. In the chapter, *Uses of Banner-stones*, is explained the insignificance of the early perforated pebble forms. Many of them are but one and one-half to two inches in size, and probably served as beads, pendants, or ornaments that were used in some other fashion. It may be possible that some of the larger specimens were put on the ends of staffs, but, because of their crudeness and simplicity

of lines, one may believe they were only individual possessions and were not tribal symbols.

Second, when the eight primary forms developed to their higher plane of more decorative designs of beauty, they were adopted as tribal symbols. The reason for this decision is mainly the one fact which we can not side-step; the great number of primary forms that are broken out at the ends of the holes, presumably by the inserting of staffs, indicating they were carried as ceremonial symbols. We must realize that considerable time was involved before the eight primary forms developed to this stage of perfection and were adopted for ceremonial purposes.

Third, after examining a large number of primary forms from the Southern Area, the writer has found that the perforations through them will average larger in size than the more highly developed patterns found farther north, particularly those from the Heart Area. Therefore, it seems very apparent that the banner-stones made at an early period were used as symbols, and were placed on the ends of staffs. An interesting *Southern Primary Form* with an exceptionally large perforation is shown in Plate 9.

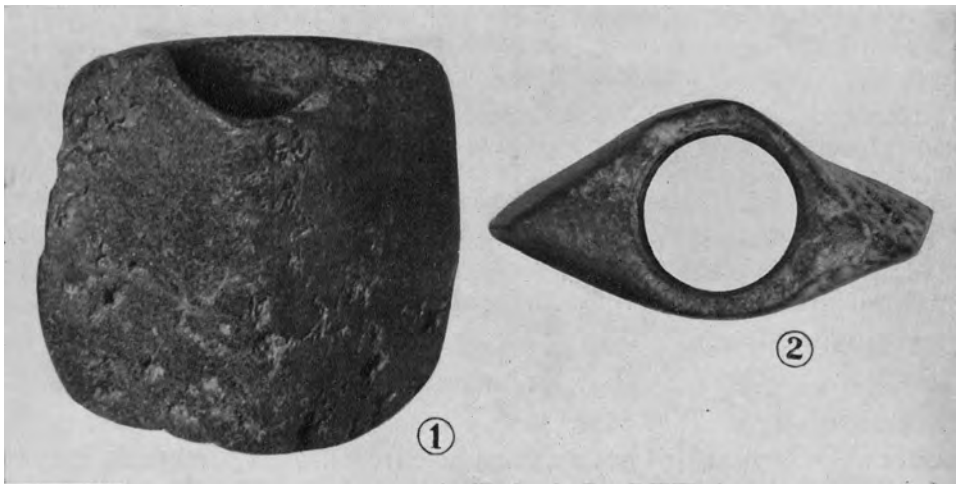


PLATE 9. This picture shows two views of an interesting Humped primary form from Elbert County, Georgia. It is made from green steatite with disintegrated cavities. No. 1 shows the face. No. 2 is the end view. The perforation is 7/8 of an inch in diameter, and is the largest perforation that the writer has observed in any banner-stone.

Plate, 7/8 actual size. FROM THE AUTHOR'S COLLECTION

Fourth, judging from the great number of highly developed type specimens that the writer has examined, it is found that the perforations through them will not only average smaller in size than those of the primary forms from the Southern Area, but also the perforations in a great percentage of them are so small that it is very obvious that they were never made with the intention of placing them on staffs. This fact can be noted by studying the bipennate banded-slate patterns, and one will find that many have perforations of but one-fourth of an inch in diameter. There are also many that have been drilled from each end with a solid

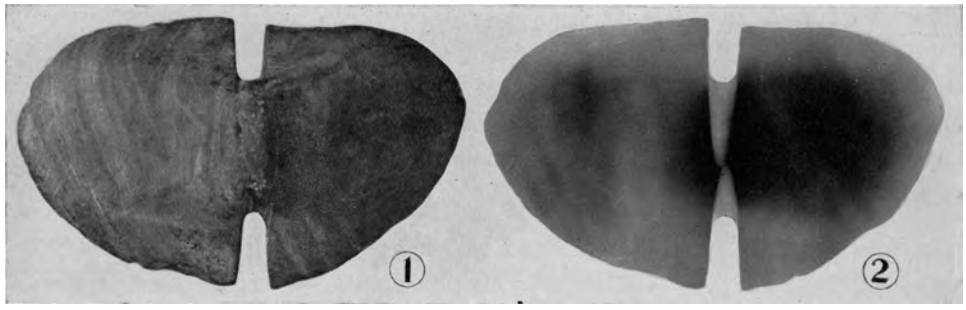


PLATE 10.

Number 1, illustrates a Double Notched Butterfly type specimen from Madison County, Indiana, that was drilled from each end by a solid stick or flint-drill. The hole from each end is conical in shape, meeting in the middle, and the opening is but ⅛ of an inch in diameter. Material banded-slate discolored by age.

Number 2, shows an X-ray picture of the same specimen. Note the small opening in the middle where the two conical holes meet. This excellent picture was made and contributed by Dr. P. F. Titterington, St. Louis, Missouri. Size 5½ by 3¼ inches.

Plate ½ actual size. FROM THE AUTHOR'S COLLECTION.

stick or a flint-drill which left a conical hole from each end, meeting in the middle with but a very small opening as illustrated in Plate 10. Therefore, one may be confident that the great number of the specimens that have the exceptionally small perforations were never placed on the ends of staffs, and furthermore, it is very obvious that it would have been impossible to do so, because of their small size.

Fifth, while it is quite apparent that we can form the conclusion that all banner-stones which have exceptionally small perforations were worn, the writer believes that we can also apply this same conclusion to all the more highly developed specimens in general, including those that have the larger perforations, and which we do know were placed on staffs and carried in the tribal ceremonies. The writer comes to this decision because he realizes how inconvenient it would be for an individual to carry around with him at all times a banner-stone on the end of a stick, waiting for a designated time for the next ceremony to take place. Naturally, it would be more convenient to remove these symbols of stone from the staffs after the ceremonies and either cache them away or place them in the possession of the chiefs, medicine men, shamans, and priests. It may also seem very logical, however, that they were fashioned on headdresses or worn on necklaces or used in other methods of adornment mainly for safekeeping and thus serve them ornamentally.

The writer wishes to present some conclusions on methods of arranging banner-stones on necklaces, but wishes the reader to regard these conclusions as theories alone. It is very simple to string one of these stones on a necklace as if it were a bead. Instead of this simple way, one may consider a more effective method of arrangement that will give the artifacts a more decorative appearance. This method of arrangement was observed while examining an old Eskimo necklace from Pribiloff Island, Alaska.

Plate 11 illustrates this necklace. It consists of old trade beads and seal teeth strung on a buckskin cord, and for the center piece there is an ornament made of black slate. Although the Eskimo center piece is truly ornamental and closely resembles a circular-shaped banner-stone, no direct cultural connection can be formed.

For comparison, in this same illustration is a necklace that is assembled in the same method of arrangement as the Eskimo necklace, using a real *Butterfly* banner-stone. Note the marked decorative appearance that the stone object has when displayed in this manner. It is interesting to know that the perforation through this specimen is unusually small. Therefore, one may believe that it was never used on a staff.

The *single-face* banner-stones that include the *Hour-glass*, *Saddle-face* and *Single-face Bottle* patterns have always been my biggest problem to decipher. It is a question why they were constructed off balance. At

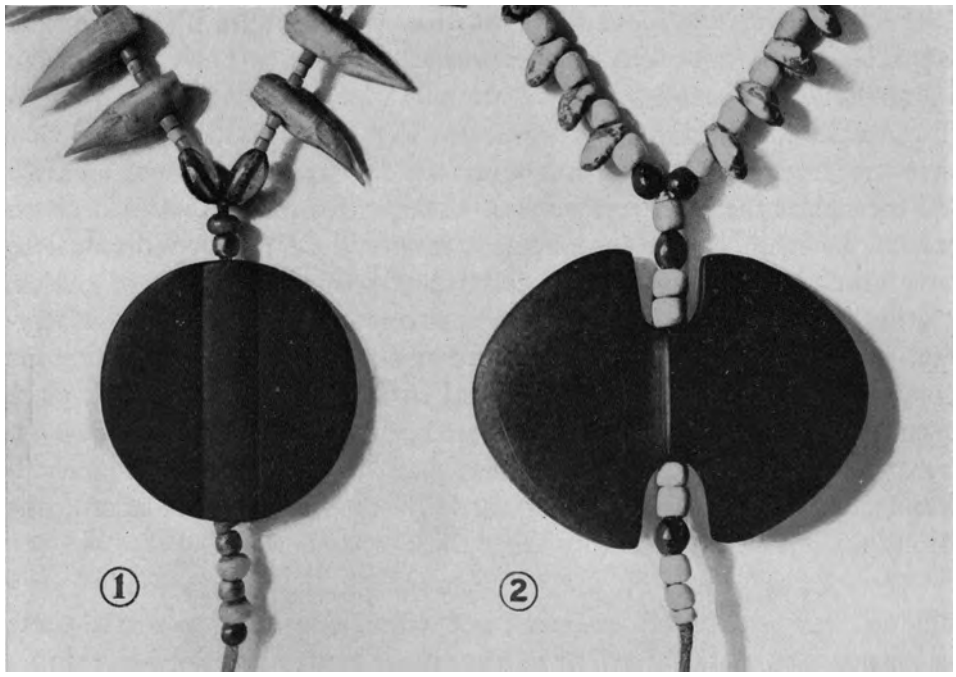


PLATE 11.

Number 1 illustrates an old Eskimo necklace from Pribiloff Island, Alaska, consisting of a black slate pendant, old trade beads, and seal teeth. This ornament has the appearance of a circular shaped banner-stone. The wings are about ⅛ of an inch in thickness at the outer edge but is reinforced through the center for the perforation. Note the decorative method that the Eskimo used for the suspension of this ornament.

Number 2 illustrates a necklace that is assembled in the same method of arrangement as the Eskimo necklace, and using a real Butterfly banner-stone of black slate from Berrien County, Michigan. Note the attractive appearance of the banner-stone, displayed in this manner. This specimen was found near Benton Harbor, Michigan. Size 4 inches by 3 inches, perforation ¼ of an inch in diameter. ILLUSTRATIONS PREPARED BY THE AUTHOR.

Plate ½ actual size. FROM THE AUTHOR'S COLLECTION.

least one can say that the more highly developed type specimens were probably worn the greater part of the time, and placed on staffs only for ceremonial occasions. These particular patterns would lend themselves very nicely for this double purpose. The back of these ultimate designs are flattened, or slightly convex, the face humped or rigid, and the end or cross-sectional view either semi-circular or triangular. The face of the

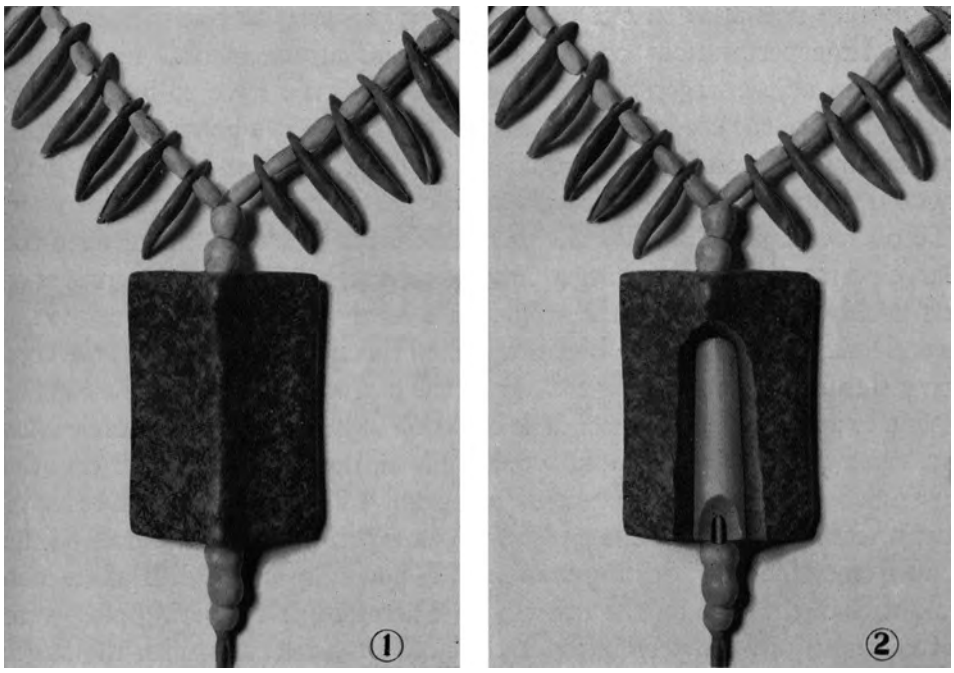


PLATE 12.

Number 1 shows a superb Saddle-face banner-stone from Illinois that is arranged on a necklace of small canine teeth. The perforation in this specimen is large, and a wooden plug was used for this arrangement, to permit it to be fashioned on in the same manner that is illustrated in Plate 10.

Number 2 shows a picture of the same necklace that has been carefully retouched as if a piece of the stone were removed and the inserted tapering plug exposed. Note that the large end of the plug is at the bottom, preventing the banner-stone from slipping off. The end of the plug is cut away to show the small hole through which the cord passes, and on the end of the cord is fashioned a bead that holds fast the inserted plug. Material of this specimen is gray porphyry. ILLUSTRATIONS PREPARED BY THE AUTHOR.

Plate ½ actual size. FROM THE COLLECTION OF DR. ROLLIN BUNCH, MUNCIE, IND.

Saddle-face types not only are ridged but have pronounced knobs on the face at each end as well. One may conclude that the flat or back surface of *single-face* banner-stones would be of an advantage when worn on a necklace, if the flat back of these shaped stones were worn next to the chest, and the more decorative, ridged and knobbed face displayed.

Such a conclusion may lead to controversy, and the question un-

doubtedly will arise that it would not be practical to put banner-stones with large perforations on necklaces by this arrangement. In order to do so, an object larger than the perforation would have to be fashioned on the end of the cord to hold the stone symbol on as a pendant, but if this were done the perforation would be so large that the ceremonial stone would continually wabble loosely on the cord from one side to the other. To overcome this difficulty the writer believes that the Indians filled the large perforation by inserting a piece of cane tightly, and cutting the ends off flushly at the ends of the stone. If a solid wooden plug were used, a small hole could have been burnt or drilled through the plug to let the cord pass through, thus reducing the size of the perforation through the banner-stone to a more practical size. The question will now arise that, under this arrangement, the banner-stone would slide off the plug. If we observe the specimens that have large perforations, one will find that the majority of them were drilled from one end, leaving a tapering hole. The hole on the end from which the drilling was done is generally one-eighth of an inch larger than the hole on the other end. Therefore, if a tapering plug were fitted tightly in the perforation and placed on a necklace with the larger end of the plug at the bottom, it would be impossible for it to slip off as illustrated in Plate 12.

Many of the *Wisconsin Winged* banner-stones are finished to a high degree of perfection, but show no evidence of drilling the perforation. Generally they are indented on each end, and it is very plausible to believe that they were made especially in this manner and were held by the index finger and thumb when used for the tribal ceremonies and dances. These particular patterns are a good example by which we can form a rather definite conclusion that they were tribal symbols and were neither used on a staff or worn.

This same complex situation can also be noted by studying bird-stones It is not uncommon to observe these objects exquisitely made of beautiful varieties of spotted granite and colored quartz materials which show that no attempt was made to drill the small perforations. It seems as though they were considered finished, and were used in some manner without the perforations. Therefore, it is very possible that the unperforated *Wisconsin Winged* banner-stones with the large indentation on each end were used in a similar manner.

CEREMONIAL USES OF BANNER-STONES

The basic purpose of the previous chapter, *Ornamental Uses of Banner-stones*, is to establish the idea that the great number of banner-stones which were used ceremonially on the ends of staffs, were also worn ornamentally the greater part of the time, and also to put forth the conclusion that a great percentage of them were worn ornamentally exclusively. It seems that there exists the belief that they were so designed for but one purpose, to place them on the ends of staffs.

This chapter will be devoted to the numerous theories that can be advanced for the ceremonial uses of these artifacts. Although one may be certain these stones were of much importance, it must be admitted that the conclusions about to be offered for their ceremonial significance can only be dealt with theoretically. Probably some day in a dry cave some of these ceremonial symbols will be found with wooden staffs attached, throwing more light on the subject, although at this time one can be thoroughly convinced that they were used in this manner, especially during the tribal, religious, and war-time ceremonies. But, if some day there should be discovered some of the ceremonial paraphernalia to which the banner-stone were probably but a part, it would be a discovery still more interesting. Such a find would, indeed, furnish the desired ceremonial knowledge that we at this time lack entirely.

The writer is aware of the fact that the majority of those who are interested in this subject are familiar with many of the ceremonial theories. Yet it is my wish to relate some of the theories, and also to advance a number of conclusions that connect certain ceremonial uses to certain particular patterns. The writer realizes that some of these theories may seem far-fetched, but my readers are at liberty to draw their own conclusions.

There is the question whether or not some of these stones were regarded as symbols of a sacred nature. It is very possible that a belief of

this nature existed. If, however, some of them were considered sacred and were regarded as stones that possessed a spiritual charm, it seems that it would be those that were in the hands of the medicine-men, witch-doctors, or priests. The terms medicine-men, witch-doctors, and priests, as so used here, refer to those who had much influence and who inflicted their powers on the more ignorant members of the tribes. We may reasonably assume, therefore, that their influence would be comparable to that of the present medicine-men, witch-doctors, and priests of other primitive races in different parts of the world.

Indians were undoubtedly superstitious people and would adapt themselves by their very nature to idols, charms, fetishes, and magic. Equipped with such stones, the medicine-men, witch-doctors, and priests were thus able to create a belief in the minds of their followers that they possessed the power to work wonders and even miracles. These magicians would attempt to cure diseases, drive away evil spirits, bring rain, give luck, interpret dreams and strange happenings, and perform countless other feats. With this dominating influence these fakirs would thrive on the proceeds netted from the various services rendered to the members of the villages. Each village of any size was probably blessed with at least one medicine-man, one witch-doctor, and one priest.

In view of the fact that there is a wide range and diversity of shapes, sizes, quality of workmanship, and materials used, we may believe that all banner-stones were not of equal importance. Those of larger sizes, displaying exquisite workmanship and made from more beautiful materials, undoubtedly carried more charm than those that were less attractive. Therefore, the medicine-men, witch-doctors, and priests, who used these symbols for their very livelihood, would strive to be possessors of the most beautiful symbols, which would add greatly to their prestige and power.

Another conclusion may be considered regarding these stones, as having a sacred significance. It may be supposed that they were used by the clans and tribes during altar ceremonies. For this purpose they were mounted on the ends of staffs and inserted in the ground. To these supposedly sacred altar symbols, offerings were placed, consisting of food, charms, and trophies, as tributes to the spirits. For these tribal and religious ceremonies the stone symbols and staffs were probably painted and decorated with feathers to enhance their beauty.

The mythology of the Thunder-bird apparently was highly regarded by the ancient Indians. One may arrive at this conclusion because of the great number of flint bird effigies that occur throughout the Mississippi Valley. Not only can one connect these flint effigies to the Thunder-bird and its legends, but this symbol can be noted occasionally on pottery and other materials. Discoidal-stones have been found with the Thunder-bird symbol encised on them, but they are exceedingly rare.

Dr. Warren K. Moorehead* in his volume, *Stone Ornaments of the American Indian*, advances a very worthy Thunder-bird theory. He expresses the belief that the bipennate or winged patterns were possibly used as tribal symbols, or effigies of this mythical creature. Quoted as follows:

"My own theory concerning the bi-pennate or winged forms is that they represented the body and wings of the thunder-bird, and to this stone body were added the head and tail which were made of perishable materials.

This theory requires some explanation. It will at once be asked why was not the entire bird effigy carved out of stone? For the same reason that the pipe-stem and the ornamentation accompanying pipes are of different materials. The head of the pipe being of stone or clay is always preserved; the stem of wood disappears as do the feathers or other decorations. It was inconvenient for the Indian to carve an entire bird effigy out of stone, and it was difficult. The entire effigy would be too large. Small effigies he did make. He found it simpler to make the body of the bird out of stone and add the head and tail feathers, just as he found it easier to make the stem of the pipe out of something else.

Medicine sacks and various pouches on exhibition in museums, frequently exhibit the dried heads of small animals or of birds. There is no valid reason why Indians should not dry the heads of birds, and fasten the necks on short sticks, securing them with pitch or sinew in the perforations of the bipennate forms. Possibly the head of the bird may have been carved out of wood."

Plate 14 shows a Thunder-bird ceremonial, prepared by the writer to illustrate Dr. Moorehead's theory. The head of a bird is attached to the end of the staff, at the top of the stone, and feathers are attached to the bottom of the stone to represent the tail. We can imagine how effective a ceremonial of this arrangement would be when carried in the ceremonial dances of the Thunder-bird. The *Crescent* banner-stone of tan indurated clay-stone that was used for this illustration is from Ohio.

*Moorehead, Warren K.: *Stone Ornaments of the American Indian.* Andover, Mass. The Andover Press, 1917.

INDIANS MAKE NEW APPEAL FOR SKULL OF THUNDERBIRD

ELBOWOODS, N. D., July 10—The Gros Ventres Indians at the Fort Berthold reservation here said today they would renew their demand for return of the skull of the Thunderbird, a relic now in the Heye Foundation Museum in New York.

The Thunderbird is a mythical bird of gigantic proportions. The older Indians say the Thunderbird is in continual conflict with a serpent in the ground, bringing on storms and wind. Lightning is the flash of the Thunderbird's eye, the swishing of its wings is the wind, and thunder, its cry.

The tribal leaders say the Thunderbird promised that if its skull were kept by the tribe rain would never fail them. About 25 years ago a former chief embraced Christianity and the sacred skull went to the museum. Since then, said the present chief, Long Bull, drouth and grasshopper plagues have beset his people.

Arthur Mandan, chairman of the tribal council at the reservation, said he would renew an appeal to the Indian Office in Washington next week for aid in recovering the sacred bundle. —St. Louis Post-Dispatch, July 10, 1937.

PLATE 13.

Number 1. Eagle or Thunder-bird effigy made of mottled pink and red flint, from Cooper County, Missouri. FROM DR. P. F. TITTERINGTON COLLECTION, ST. LOUIS, MISSOURI

Number 2. Ear-spool, taken from the Temple Mound in Le Flore County, Oklahoma during the fall of 1935. The Thunder-bird symbol encised on this superb object is portrayed in the finest manner., and is the only specimen of its kind so far observed. Material, gray sandy shale. FROM E. K. PETRIE COLLECTION, BURLINGTON, WISCONSIN

Number 3. Eagle or Thunder-bird effigy made of white flint, found in Jersey County, Illinois. It is very apparent that the majority of the flint bird effigies were made from broken spearheads. By re-chipping, the head and upper part of the wings were formed. The notches of the spear-heads formed the under part of the wings, and the base with no necessary work formed the tail.

Plate 2/3 actual size. FROM DR. P. F. TITTERINGTON COLLECTION, ST. LOUIS, MISSOURI

PLATE 14. This illustration shows a Thunder-bird ceremonial, prepared by the author according to Dr. Moorehead's theory. To make this supposed ceremonial symbol appear as realistic as possible a real winged banner-stone from Ohio, county unknown, was used, and the real head and tail feathers of a Pigeon Hawk, A.O.U. Number 357.

Plate 5/9 actual size. FROM THE CON FOSTER MUSEUM, TRAVERSE CITY, MICHIGAN

A very interesting conclusion for the supposed uses of the *Butterfly* banner-stones, was advanced by Mr. Lee E. Hill. Quoted as follows:

"Fairhope, Alabama, May 9, 1935.

BURIAL THEORY OF THE BUTTERFLY BANNER-STONE

The Butterfly banner-stones were used by the Indians in the burial ceremonies of infants. The Indians thought that they would serve as a guide to escort the inexperienced and helpless infants on their way to the 'Happy Hunting Ground.'

The Indian, in roaming through the woods, was attracted by the cocoons hanging on the bark of trees. He watched the cocoons and found, to his amazement, that the butterflies, beautiful in their many colors, emerged from the cocoons and flew into the air. From watching this evolution from cocoon to butterfly, in its beauty and apparent freedom, he conceived the idea that it would make a wonderful escort for his beloved infant's spirit to the spirit world, the Happy Hunting Ground.

Hence his idea of making the effigy Butterfly banner-stones, and always hunting the most beautiful materials to make them from. Rose quartz and banded slate, of various colors, are the most common materials used, the slate predominating all other materials. It is probable that these banner-stones were worn until needed in burial ceremonies. Their rarity would make one believe that only chieftains or great warriors were possessors of these effigies for their children's burials. These are my conclusions after almost fifty years of research work.

(*Signed*) *LEE E. HILL.*"

While Mr. Hill's butterfly theory seems very logical, there are certain points that need some explanation. This theory is directly associated with only certain designated patterns. From the fact that the *Butterfly* shaped banner-stones do show lines that are similar to those of butterflies, it may seem very likely that they were designed from them. Yet it is only the highly developed or ultimate designs of these groups that carry these lines of resemblance. In view of this fact we must consider the different stages of evolution of shapes, and the time involved for these type specimens to reach this highest plane of perfection. We can then come to a decision that the butterfly was not instrumental in the origin of the design of these

*The late Mr. Lee E. Hill, was for many years the exclusive buyer for the late E. W. Payne of Springfield. Illinois, who assembled one of the largest Indian relic collections in the world. Mr. Hill made five trips to Central America for Mr. Payne in quest of relics. As a tribute to Mr. Hill, the writer is proud to quote his conclusion, "Burial Theory of the Butterfly Banner-Stone", which he wrote for me by special request.

patterns. If they did have any influence, however, it was only on the final designing during the later phase of the Banner-Stone Era.

Assuming that the *Butterfly* banner-stones were butterfly effigies, it would thus be very possible that they were deemed by the Indians as symbols of new life or immortality. The transformation of the cocoon to butterfly might have conveyed the idea to the Indians, the beautiful thought of life itself, to live again. Their minds might have been so impressed by this phenomenon that they perfected the designs of simpler winged forms to be effigies of the butterfly, thus bringing about the final development of type specimens. The ancient Chinese carved small effigies in the form of cicadas, from different kinds of stone, which were placed on the tongues of their deceased as symbols to carry them to new life. The late Mr. E. W. Payne, of Springfield, Illinois, referred to banner-stones, and particularly those of the butterfly shapes, as the "Scarabs of the Mississippi".

In view of the fact that the butterfly theory connects so well with those particular patterns, there is no reason why other conclusions of this nature can not be connected to other shapes of these stones. For example: the circular shaped forms, so commonly found in some of the southern states, and also occasionally found in the Heart Area, may influence us to believe that these patterns were symbols of the Sun. But whether or not they were actually used for sun worship one can not say. Along the same line, we may also consider that possibly the crescent shaped specimens were so designed in reverence to the moon.

There are thousands of burial mounds scattered over the country and hundreds of these have been opened, bringing to light pipes, pottery, beads, copper, and flint relics that give us an insight into the every-day life of the prehistoric Indians. Yet, in all these excavations, only on exceedingly rare occasions do these ceremonial symbols occur. It is certain that if these stones were made only for ornamental purposes they would have been buried more often in mounds. Therefore, this fact is the most important reason why one can regard them as being ceremonial symbols. Perhaps each year, on certain occasions, these stones were carried and displayed in the tribal ceremonies, dances, and festivals.

A great number of banner-stones show that a piece of the stone is broken away at the end of the perforation. These breaks were caused

caused either by the staffs being inserted into the perforations too tightly, or by the staffs getting wet and freezing, causing them to expand sufficiently to break these stone objects. Two specimens broken in this manner are shown in Plate 15.

Occasionally banner-stones were broken in two, by breaks that often run parallel with the perforation. The Indians would salvage many of these that were broken in this manner by drilling a small hole through each wing near the perforation, and the two halves were then bound together.

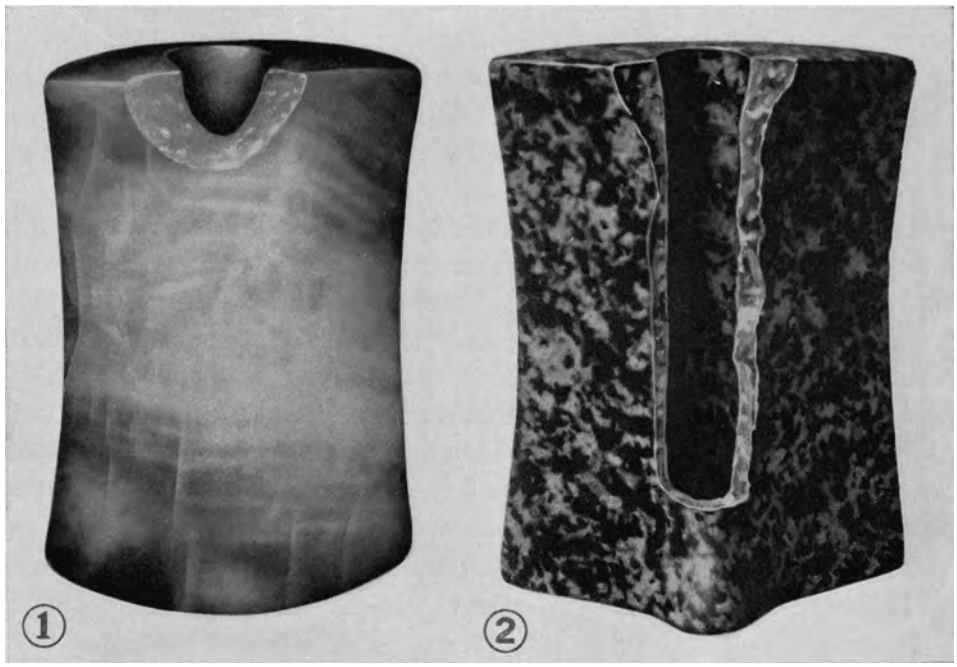


PLATE 15. Two excellent examples of specimens that show breaks caused by the inserted staffs. Note that the breaks which expand to the outside were caused by pressure that came from inside the perforations.

Number 1. Hour-glass type specimen made of ferruginous quartz. Found in Rock Island County, Illinois, near Moline. Size 3 by 2 1/16 inches. Catalogue number 8.

Plate 7/8 Actual size. FROM THE AUTHOR'S COLLECTION

Number 2. Saddle-face type specimen of black and white granite. Found in Pike County, Missouri. Size 2¼ by 3 inches. Catalogue number 25.

Plate 7/8 actual size. FROM THE AUTHOR'S COLLECTION

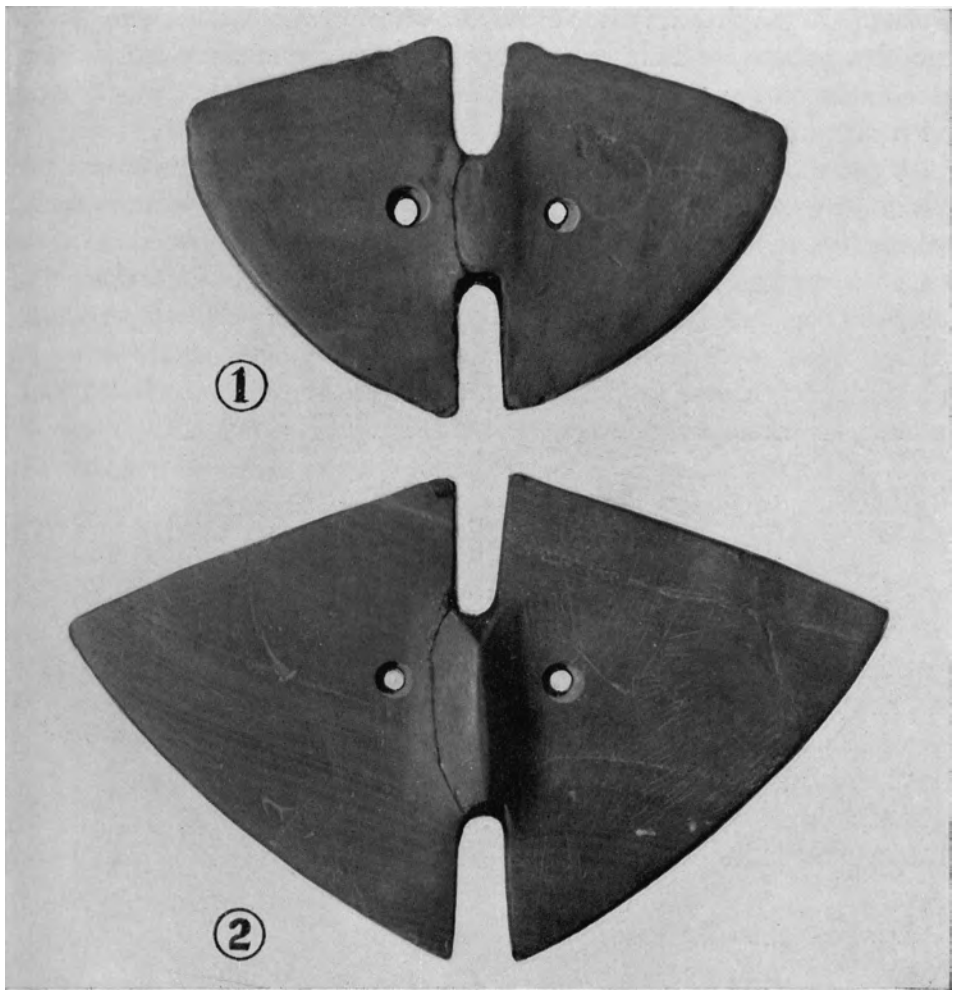


PLATE 16. Double Notched Butterfly banner-stones that were broken in two, and salvaged by the Indians by drilling a small hole through each wing near the perforation, so the two halves could then be bound together.

Number 1, Whitley County, Indiana. Material, green banded-slate.

Number 2, Noble County, Indiana, 6 3/4 inches across. Material, banded-slate.

Plate ⅔ actual size. FROM DONALD O. BOUDEMAN COLLECTION, KALAMAZOO, MICHIGAN

There were others that happened to have part of a wing broken off. Many of these were also repaired by this same method. It is not uncommon to note this sort of repair work, especially those of the winged or bi-

pennate patterns that are made of banded-slate. Invariably, the two halves become separated, and although single halves are commonly found, it is exceedingly rare to discover both halves of a specimen that was broken and repaired in this manner.

While the previously mentioned repair method served very well for repairing the delicate, thin winged bipennate patterns that were so easily broken, it was not practical to repair the broken short winged or thick *single-face* designs by this method. Although many of the thicker and more sturdy patterns were occasionally broken, it seems that no particular attempts were made to repair them. If any attempt, however, was made to repair them, it was necessary for the Indians to resort to other repair methods, an example of which is shown in Plate 17.

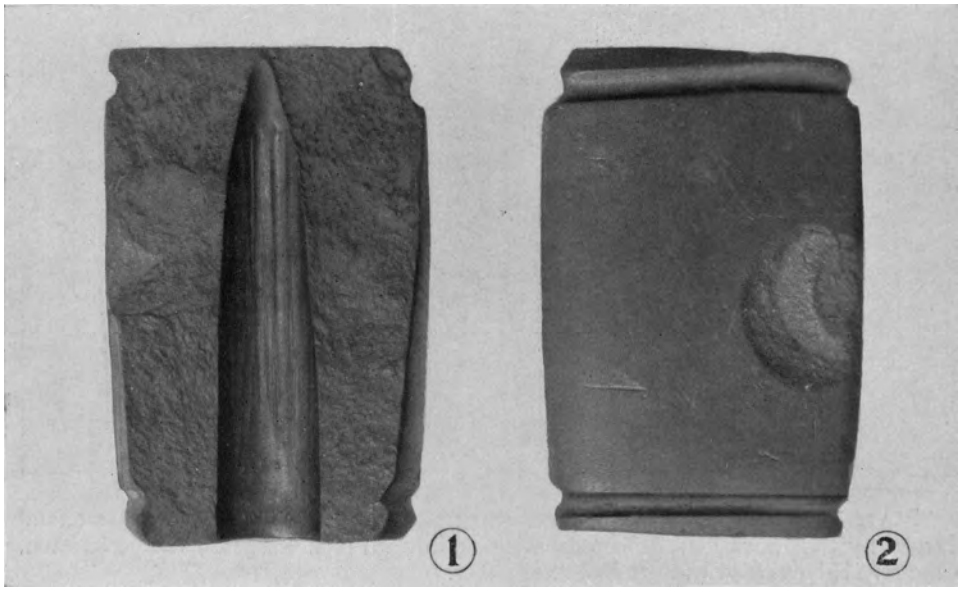


PLATE 17. A rare specimen from Van Buren County, Missouri, that was broken in two and was repaired in a very unusual manner. Note that a groove was made around each end of the broken banner-stone, and the two halves could then be bound together. Although only one-half of this banner-stone was found, it can be classified as an early Humped form. Number 1 shows the break and the conical shaped drilling. Note the grooves in the upper part of the hole, caused apparently by the inserted staff. Number 2 is a view of the flat back. Material ferruginous slate.

Plate actual size. FROM DR. P. F. TITTERINGTON COLLECTION, ST. LOUIS, MISSOURI

Another point that is interesting is the fact that the perforations of many of the higher developed patterns, especially those made of slate or granite, are worn comparatively smooth, obliterating some or all of the striations caused by the sand drilling. This wear or polish was caused by the constant insertion of the staffs, but is not so noticeable on those made of quartz, due to the natural hardness of this rock. In order to accomplish this wear, the stones had to be in use for many years and put on and removed from the staffs countless times. Naturally the specimens that do not show much wear were not put through such an ordeal as those which have perforations worn smooth.

There is little doubt in the writer's mind but that many of these objects were used from one to two hundred years and possibly more. When one takes into consideration the many years that some of these ceremonial stones were handled and used, one can easily account for the fact that a great percentage of them are highly polished, and the perforations worn smooth.

Plate 18 shows a small but very interesting specimen that was broken apparently by the inserted staff. From the condition of the perforation and the polished surface of the outside of the stone, it is very evident that this object was in use for many years. This pattern can be classified as a *Southern Ovate Primary Form*, and similar in shape to those that occur in the Southern Area, extending from the lower Mississippi Valley eastward to Georgia and South Carolina.

The most interesting feature about this specimen is the highly polished surface on the raised off-set area of the perforation, which proves that it was fastened on the end of a staff. Therefore, we may assume that this object was ceremonially used in this manner even though it is a very early designed simple pattern. We may also assume that all of the eight primary forms were ceremonial symbols, and were made exclusively for this purpose. It is very interesting to note how simple it is for one to study the travel routes which the prehistoric Indians had taken from a common center, by observing this insignificant and broken specimen from the state of Missouri, which was probably carried there from the Primary Area. There is no doubt but that some day the travel routes which the prehistoric Indians had taken will be studied even more extensively by observing the evolution of banner-stones.

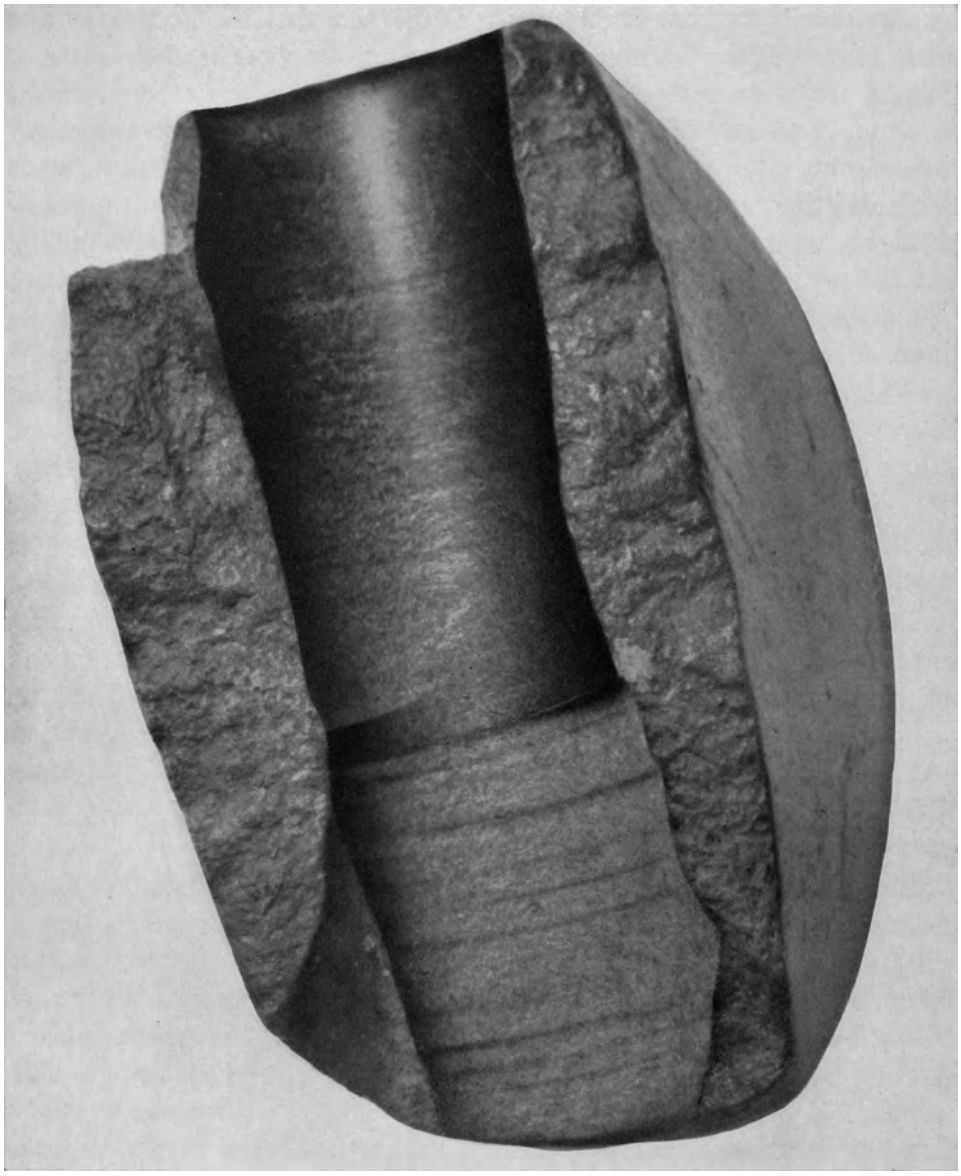


PLATE 18. Dunklin County, Missouri. This specimen is interesting, for it shows that it was drilled from each end. Note that the raised off-set area of the side wall of the perforation is highly polished from the friction of the staff. The remaining unpolished area of the perforation did not come in contact with the staff, and clearly shows the striation of the sand drilling. The material is fine grained green granite.

Plate 3 times actual size. FROM THE AUTHOR'S COLLECTION

ARTICLES BY NOTED AUTHORITIES

WISCONSIN BANNER-STONES

PROF. CHARLES E. BROWN

Curator, The State Historical Society of Wisconsin
Madison, Wisconsin

During the forty years of active archaeological investigation in Wisconsin, in the course of which I have examined a thousand or more Indian camp and village sites in Wisconsin and about half as many more in the surrounding states of Minnesota, North Dakota, Iowa, Illinois and Michigan, I have never myself found an entire banner-stone. Fragments of these ceremonial objects I have now and then found among the surface debris of such sites but never a complete, uninjured specimen. Neither have I been successful in recovering any such specimens from any mounds and graves which I have excavated. This is quite surprising, as thousands of banner-stones have been collected from Indian sites in the Middle West and a quite large number from such places in Wisconsin.

At some time or other in the years of my archaeological experience I have examined very many of the quite large number of banner-stones now in public and private collections in my own and also in other states where they occur.

In 1912, I prepared for the "Wisconsin Archaeologist," the official quarterly bulletin of The Wisconsin Archaeological Society, a monograph on "The Banner-stone Ceremonials of Wisconsin". In this paper I discussed the probable uses of these interesting stone artifacts by the prehistoric Indians of the Eastern United States and prepared a description of the Wisconsin forms. There were twelve of these designated as follows:

(1) Tabular	(5) Butterfly	(9) Knobbed
(2) Square	(6) Oval	(10) Bayonet
(3) Reel-shaped	(7) Crescent	(11) Pick-shaped
(4) Axe-shaped	(8) Double-crescent	(12) Boat-shaped

All of these were made of stone-slate, granite, syenite, mica schist, porphyry, quartzite, and other attractive stones.

I do not know that during the twenty-four years which have passed since this monograph was published that any new forms of banner-stones have been found in Wisconsin, although many additional specimens—finished and entire, unfinished and broken—have been collected. Three banner-stones made of native copper have been found and have since been described and illustrated in the above mentioned bulletin. Two of these are in the famous Henry P. Hamilton collection in the State Historical Museum at Madison, and the other in the Joseph Ringeisen, Jr. collection at Milwaukee. The latter, of double-crescent form, is the most unique and interesting of these three. It was described by William A. Titus in The Wisconsin Archaeologist issue of December, 1916. A fine illustration of it appears as the frontispiece of this bulletin.

Accompanying my monograph, there was a map showing the distribution of banner-stones in Wisconsin. This showed that the greater number of those recovered in this state had come from the southeastern counties of Wisconsin. None had then been found north of the center of the state. Since then specimens have been collected as far to the north as Dunn County in northwestern Wisconsin. Additional specimens have also been obtained from the west shore of Green Bay in northeastern Wisconsin.

Good collections of Wisconsin banner-stones are in the Historical Museum at Madison and in the Milwaukee Public Museum. Of the various problematical forms of prehistoric Indian artifacts, banner-stones, because of their excellent workmanship, many interesting forms and the often great beauty of the stones selected by the aborigines for their manufacture, may be said to hold the first place in the hearts of hundreds of Wisconsin collectors of Indian artifacts.

January 25, 1936

AN APPRECIATION

DR. FAY-COOPER COLE

Chairman of Department of Anthropology
The University of Chicago

It is hoped that this handsome volume prepared by Mr. Knoblock will lead to a greater appreciation of the culture of the North American Indians.

The banner-stones probably exhibit the highest development of stone of these people but in many other ways they showed great ability.

Archaeological studies indicate that the Indians arrived on this continent with a very simple neolithic culture. On this foundation they built quite different cultures in various areas. In one region they lived primarily on acorns, while their artistic ability was shown in basketry. The Eskimo, hunters of sea animals, constructed cleverly designed utensils and weapons of bone and decorated them with carved or incised designs. On the Plains the Buffalo Hunters found time to ornament their rawhide parfleches with symbolic color designs, while their work in porcupine quills and later in beads was of ecxeptional beauty. So we might go from region to region and find evidences of great potential ability.

Recent studies have revealed to us the history of the Indians of the Southwest far back of the Christian era. Now work in the Mississippi Valley and the Eastern States is likewise bringing to our view a long succession of cultures. We are beginning to learn how civilization grew on this soil we call America.

The beautiful objects, such as are illustrated in this volume, only developed through centuries of struggle. We seek to learn this story of achievement but it can only be revealed by careful and painstaking excavation and by the keeping of exact records of everything found.

Most Indian mounds and village sites have been destroyed, but careful preservation and study of what remains may still reveal much of interest and value to students of cultures.

July 1, 1937

SOME COMMENTS

DR. WARREN KING MOOREHEAD

Director, Phillips Academy Museum
Andover, Massachusetts

Mr. Knoblock kindly asked me to write an addition, or statement, with reference to the "Banner-stones or Problematical Forms". I do not feel that I should occupy much space. The subject is very comprehensive and important. The hatchets, the knives and projectiles, and the problematical forms are quite as important as the art of the pottery maker, concerning which we have much literature.

It seems to me, after fifty-one years of American Archaeology, that we go in cycles. Perhaps I am wrong in this statement. When I began the study there was concentration on the part of experts as to the question of palaeolithic man in America.

We became much interested in southwestern archaeology. Throughout the two or three cycles there was always present our mound problem in its various aspects. There were several attempts at classification and distribution of chipped objects in this country. Possibly the outstanding feature in this was what is known as the Baltimore Classification made many years ago and accepted by the American Anthropological Association. At present there is a great flair for what is termed "woodlands culture." I shall not expand the last feature. Men of many minds are working upon these various subjects.

This problem of Mr. Knoblock's is concerned with the "Banner-stones". These are confined to the "woodlands area". Frankly, I don't like that term, it is meaningless, since both woodlands and stone objects, in the State of Maine, are quite different from those of Louisiana. Furthermore, the woodlands and objects of Minnesota are to be differentiated from those of Florida—and so on, across the country. When we have "checked up" accurately, on distribution of chipped objects, hatchet forms, and problematical stones in the great woodlands area, and these finally are compared with distribution of ceramic art, our future scholars will be able to draw important and accurate conclusions.

Up to the present our classifications have been based chiefly upon linquistic stocks and distributions. Major Powell's famous linguistic

map, published many years ago, while varying in certain detail from linguistic maps of the present, in the main was accurate. Now we need a comprehensive map published in sections covering the entire United States and showing the distribution of form and art in clay and stone.

We have much detail and concentration in localities. We lack a broad, comprehensive study of the entire field. This, I believe, will come in due course of time.

August 16, 1937

Warren King Moorehead

THE SO-CALLED BANNER-STONES

PROF. HENRY CLYDE SHETRONE

Director, The Ohio State Archaeological and Historical Society
Columbus, Ohio

The numerous and widely distributed artifacts popularly designated as Banner-stones, varying greatly in form but obviously closely related, undoubtedly are material emblems of original symbolism.

While certain forms of Banner-stones appear to represent butterflies, birds and other animate creatures, the writer is inclined to believe that their basic motive may be found in the edged weapon—as an axe, a hatchet or "tomahawk". Since generalization is the rule in simple material culture, it is to be expected that the original type, whatever it may have been, would eventually undergo modification, with—as in this instance—resulting diversity of forms.

From observation of the use of analogous ceremonial objects by historic Indian tribes and other primitive peoples, it seems obvious that the Banner-stones, mounted on staffs, served as wands and maces; and that they were also adjuncts to ceremonial head-dresses. It may be supposed that they were tribal or group, rather than individual, possessions, and that they were placed in the keeping of chiefs, shamans, priests and medicine men for use on ceremonial occasions.

Consideration of Banner-stones gives rise to a thought which, while not exactly apropos of the subject, is perhaps not out of place. One has only to recognize the importance of ceremony and symbolism in the

culture of primitive peoples the world over, and to remember that by far the greater percentage of symbolic paraphernalia were made from perishable materials which readily disintegrate, to appreciate the impressive complex which the surviving evidences really represent. The relative percentage of survival of this type of artifact is strikingly suggested in the finds of Cushing at Cayo Marco, Florida, where a great profusion of artistic and ceremonial objects, fabricated almost entirely from perishable materials, were finely preserved as a result of unusual conditions. But for this exceptional situation, and based on the imperishable materials alone, the remarkably advanced cultural attainments of the Cayo Marco inhabitants would have been considered as ordinary at best.

To conclude, the Banner-stones may be considered as emblems and symbols intended as material representations of primitive esthetic concepts, about which we may indulge in interesting and perhaps valuable surmise. While the lay observer may see only an interesting "relic", the archaeologist will delineate from the evidence a generalized picture which will fit nicely into the pattern of human experience as he sees it.

December 26, 1935

A COPPER BANNER-STONE

PROF. GEORGE A. WEST
Milwaukee Public Museum
Milwaukee, Wisconsin

A copper Banner-Stone is illustrated on page 335. The copper came from the Isle of Royale, Lake Superior. This specimen is unique because it is the only copper banner-stone so far found with curved blades. There are but two others made of copper, that have come to my attention, and they are of a later type, being square across the cutting edges, instead of rounded.

The Indians who worked the ancient copper mines of the island, were principally from Wisconsin. In order to reach their work they had to follow the forest trail for many miles to what is now known as the portage canal, on the south shore of Lake Superior, where they embarked into

canoes and followed the Lake shore around to the Isle of Royale, a considerable distance. Returning after a summers work, they followed the same route.

So far as the land is concerned, copper nuggets are frequently found on either side of the traveled route. Along the forests of Green Bay and the streams that enter Lake Michigan there are forty-four village sites, showing evidences of work on copper.

In searching for copper, the miners followed a streak of malachite along the surface until it settled farther down into the rock and then followed it downward until a nodule of pure copper was found.

The Indian Way of mining is both long and tedious. After a streak of malachite is discovered, large amounts of dry wood was gathered in order to make repeated fires on top of the rock, above the streak of malachite. Water next had to be carried from the Lake, up hill a thousand feet or more. A fire was built and repeatedly built, water was douced onto the heated rock, with the idea of reducing it by fracturing it; the wet rock was then pounded with a granite maul, without a handle. The loosened rock was cleared away. The mauls were hard heads, unworked, obtained from the creeks of Canada. The process of building fires, the use of water, and hammering with a stone maul had to be repeated many times, or until a nodule of copper was reached or the line of malachite petered out. The amount of copper mined by any one Indian, was very small, and the time required to secure enough material to make an implement or two is great. About 5000 implements and ornaments have been found in Wisconsin, most of the copper having been brought from the Isle of Royale through a period of perhaps 2000 years.

The process of heating, drenching with cold water, pounding and repeating the process was found necessary in order to make implements and ornaments. Let it be known that there is no way of tempering copper without adding to it some alloy. Copper has been hardened by the cold process, that is if by beating when heated. Pounding copper when warm separates the molecules and erosion does not take place so rapidly.

1936.

Geo. F. Wright

THE FUNCTION OF "BANNER-STONES"

DR. WM. S. WEBB

Head of the Department of Anthropology
The University of Kentucky
Senior Archaeologist, Tennessee Valley Authority

Because of their varied form, the wide range of stones used and the skill and patience manifested in the manufacture of banner-stones, it has not been easy heretofore to suggest for them any utilitarian purpose.

Recent excavations in the shell mounds of Pickwick Basin in Alabama and on the Green River in Kentucky have revived interest in the discovery of Moore in 1915 of antler hooks associated with prismatic "banner-stones" which he called "net spacers". Evidence today demonstrates that these antler hooks were distal ends of atlatls, or throwing sticks, and that the banner-stones were atlatl weights. The atlatl, a flat slab of wood about 20 inches long and 2.5 inches wide, with handle and finger grooves at the proximal end, was sometimes reduced to a cylindrical rod about .6 inches diameter at the distal end. On this rod a banner-stone was slipped and an antler hook, conically drilled, was attached securely. The "banner-stone weight" gave balance and power to the throwing stick and doubtless increased its efficiency. Supporting this belief, antler hooks are found in graves, in juxtaposition to "net spacers", banner-stones and "butterfly stones" with their holes collinear and of the same diameters. Flat stone bars and boat shaped stones have been found in use as atlatl weights attached to wooden atlatls, preserved in caves of the Southwest.

From evidence accumulated in the last three years, the opinion is expressed that the atlatl was in general use in the eastern United States before the advent of the bow; many of the wooden atlatls carried weights, such as rectangular bars, bar gorgets, boat stones, and perhaps bird stones; in some cases the atlatl hook was made of antler and many forms of banner-stones were used as atlatl weights; in particular stone rings, stone beads, winged banner-stones, lunate forms, "L"-shaped gorgets.

May 29, 1939.

PROCESS OF MANUFACTURE

An unlimited amount of time, patience, and skill was required for the Indians to work down pieces of stone into the various shapes of banner-stones. It was also a tedious and laborious task to drill the perforation through them.

The first step, however, that was taken toward the making of these artifacts was to find a stone suitable for the purpose. It seems that in the majority of cases, water-worn or glacial stones furnished the source of material that was used. Although a natural water-worn stone of a certain shape might serve well for the making of some particular pattern, it would be unsuitable for the making of others. Consequently it was to the Indians' advantage to select as near as possible stones of the size and shape for the intended banner-stones that they were to make. By this careful selection much unnecessary time and work could be eliminated.

Although the majority of the specimens from the Heart Area were made from water-worn pebbles of banded-slate, it is interesting to know that the Indians had also quarried for this material. There are sections in the states of Ohio, Pennsylvania, and New York where banded-slate outcrops, and at some of these out-cropping localities may be seen the evidence of where they had quarried.

It is also interesting to know that in other sections of the country the Indians had quarried for flint, copper, steatite, and other materials. There are numerous sections in the Allegheny region and in some of the New England States which show that they had quarried for steatite on quite an extensive scale. Many of the mauls, hammer-stones, and picks that were used have been found at these quarries. Some of these implements are worn and broken from use. Although a great percentage of the banner-stones from these regions are made of steatite, one must not adopt the idea that the aborigines quarried for this material for the making of these artifacts alone. Apparently it was done mainly for the purpose of securing

large pieces of this rock from which the effigy pipes, bowls, and other articles of extraordinary size were made.

It is only from the great number of unfinished banner-stones that we can observe and acquire the knowledge of the various processes of manufacture that were employed in their making. Many of the unfinished specimens, however, from the various localities show that the procedure for making them was carried out in a different manner. But whatever the difference may be, is due mainly to the kind of material that was used, or the shape of the patterns that were being made. The making of certain shaped patterns necessitated the employment of unique techniques, principally those of chipping, and of sawing the stone. We may readily note evidence of chipping by studying some of the unfinished specimens that were made from quarried banded-slate. By chipping, the artisan could block out pieces of this stone into crude turtle-back shapes that were suitable for the making of banner-stones or for other artifacts. These crude forms were then carried back to the villages and finished at their leisure. Although many patterns from the Heart Area were made of quarried banded-slate, the majority of those from this region were made from glacial or water-worn pebbles of this material that did not necessitate any chipping.

The desired shapes of banner-stones were accomplished by pecking with pieces of flint, and by grinding with sandstone or other gritty materials, or by scraping with flakes of flint until all traces of pecking were obliterated. Many specimens that show a fine smoothness acquired this finish by being rubbed with fine sand. The high polish displayed on many of the finer objects is due, no doubt, to the many years of constant handling and the use to which they were placed.

Although pecking, grinding, scraping, and polishing were necessary to bring about the various shapes of all banner-stones, yet the drilling of the perforations was done at different stages of their manufacture. For example: the majority of the unfinished banded-slate specimens from the Heart Area show that it was the general custom to drill the perforation before the final finishing was done. This fact can especially be noted if one observes the unfinished and delicate thin winged bipennate patterns from this area. It is very apparent that, because this material is so fragile, it was necessary that great precaution be used while drilling the perforations

since there was always considerable danger of breaking these objects during this procedure—hence the final finishing after the perforation was completed. A slight bump while drilling the perforation could break a wing, or the necessary pressure during the operation could chip or damage the delicate stone. Many of the *Butterfly* patterns are of extraordinary size and occasionally some of them display wings no thicker than one-eighth of an inch. It is, therefore, certain that the remarkable workmanship that is displayed on such specimens could only be accomplished after the perforation was completed.

In contrast to the foregoing procedure, specimens from other localities show that many were finished to the last degree of perfection, even to the extent of polishing, before any attempt was made to perforate them. Evidence of this procedure is frequently noted throughout the Mississippi Valley, and may be accounted for by the fact that the patterns from this area are more sturdy in shape and that the majority of them were made of granite and quartz or other hard materials.

What seems to be the most interesting technique which was practiced in making certain patterns, and which is particularly noted in the Heart Area, is the method of sawing away the stone. For example: the deep notches in the final stages of the *Notched Butterfly* and *Ovate* and other types of banded-slate were brought about by sawing away the stone with flakes or pieces of flint.

We can note the advantage of the method of sawing to bring about the deep notches in the delicate *Notched Butterfly* and *Ovate* patterns. By this method not only could the notches be made more easily, and much faster, but it would also lessen the danger of breakage that would be encountered if an attempt were made to produce them by pecking.

Plate 19 illustrates a number of unfinished banner-stones which show the various procedures taken in the manufacture of several different designs. Some of the objects of banded-slate were merely chipped into the desired shape of some pattern from quarried material. Others show considerable pecking and grinding. The *Double Notched Butterfly* specimen No. 5 is very interesting because the artisan was making the notches in a very unusual manner. Note that two indentations were drilled in the side of the stone, and then by sawing with flint, a groove was made from each indentation to the outer edge of the stone.

EXPLANATION OF PLATE 19

UNFINISHED SPECIMENS

These Interesting Unfinished Specimens from the Heart Area Display the Various Techniques Imployed in Their Making

Plate 1/3 actual size

No. 1—Crawford County, Ohio. Material, black slate. Note that this unfinished Crescent or Pick specimen was chipped into the desired shape apparently from quarried material. *John Maffenbeibr collection, Newark, New Jersey*

No. 2—Allegan County, Michigan. Material, banded-slate. Note that this unfinished Double Crescent specimen has been pecked into shape, but shows no evidence of grinding. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 3—Fontaine County, Indiana. Material, banded-slate. Unfinished Butterfly pattern pecked into shape. Size 8 1/2 x 4 1/4 inches.
Logan Museum collection, Beloit College, Beloit, Wisconsin

No. 4—Ionia County, Michigan. Material, banded-slate. Unfinished Curved Pick specimen pecked into shape, showing no evidence of grinding.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—Locality unknown. Material, slate. Unfinished Double Notched Butterfly type. Note that the artisan was making the notches in a very unusual manner by drilling two indentations in the side of the stone and then employed the technique of sawing the grooves from each indentation to the outer edge of the stone. Neg. No. 24587-F. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 6—Portage County, Ohio. Note that this unfinished Curved Pick or Lunate specimen was chipped into shape apparently from quarried material and shows no evidence of pecking or grinding. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—Wayne County, Indiana. Material, green banded-slate. Found near the town of Whitewater. This specimen is pecked into a most unusual shape. Note the hole pecked through the stone to avoid the danger of breakage while making a presumingly single-notched Ovate pattern. Formerly in the Earnest Dickson collection.
Claude U. Stone collection, Peoria, Illinois

No. 8—Clay County, Illinois. Material, black and white granite, consisting mainly of quartz. There were ten similar specimens of the same material found on one camp site, nine showed no evidence of drilling, one was drilled and polished. Probably this unfinished form was intended to be made into a Saddle-face specimen.
C. C. Benedict collection, Decatur, Illinois

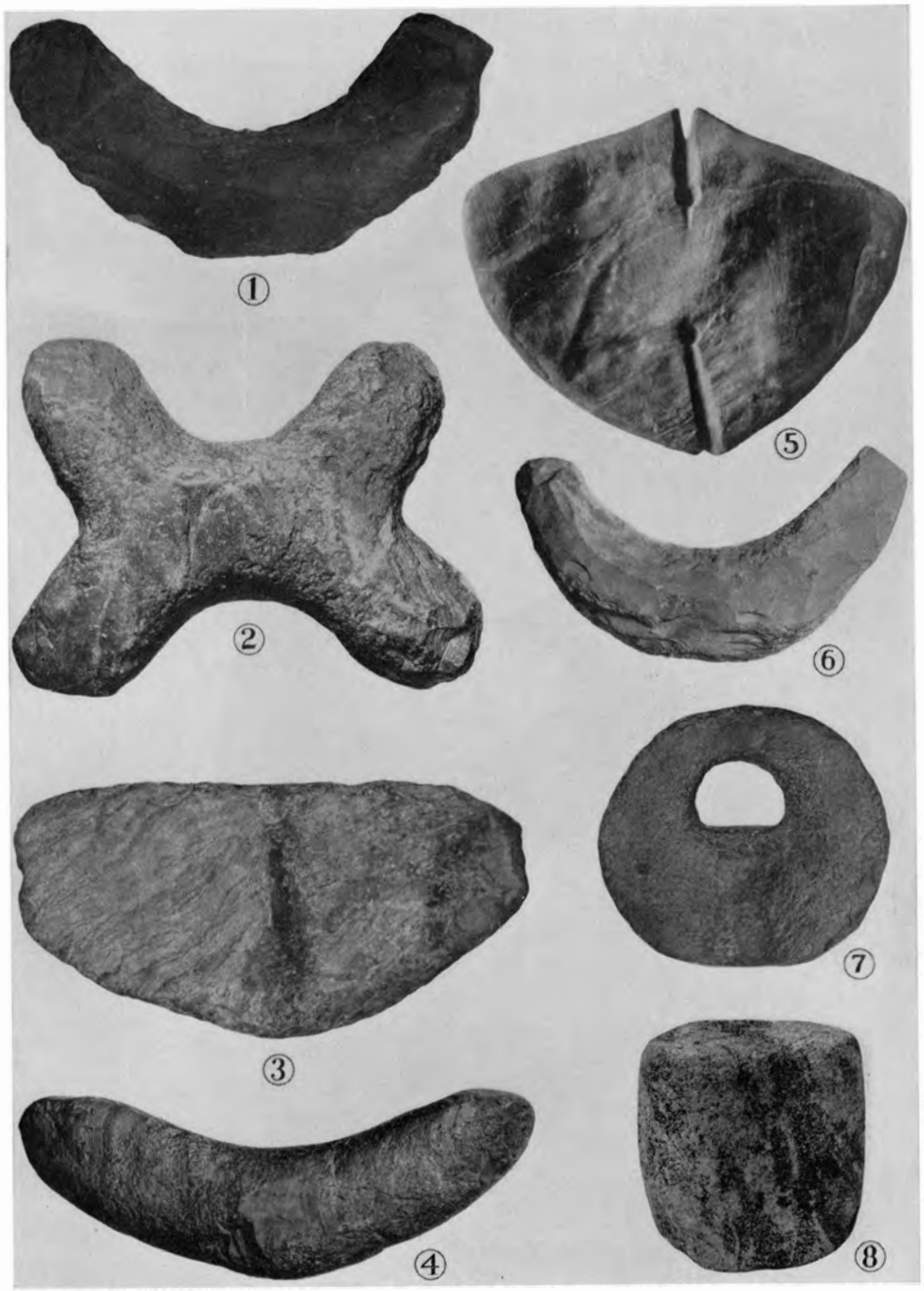


PLATE 19

PLATE 20.

Brown County, Ohio. Material, banded-slate. This specimen is an unfinished Notched Ovate pattern. The two large holes were made to form the expanding notches. It was intended to saw or grind a gap through the connecting stone at each end, and then drill the perforation. This procedure reduced the danger of breakage when forming the delicate prongs.

Plate actual size.

DONALD O. BOUDEMAN COLLECTION, KALAMAZOO, MICHIGAN

TECHNIQUE OF DRILLING

The previous chapter *Process of Manufacture* described briefly the various procedures necessary for the manufacture of banner-stones. It also pointed out the fundamental reasons why the drilling of the perforations was done during the various stages of their making, and based these reasons principally upon the shape of the specimen being made, or the material being used. This chapter will be devoted to the various techniques of drilling, and also to describe some very interesting experiments which were carried out by the author.

The practice of drilling holes in stones can be traced back some 20,000 or 25,000 years to the European holed axes made by those early Neolithic cultures. Primative methods of drilling can also be observed throughout the world. The simplest technique of drilling was accomplished by revolving a stick between the palms of both hands. Through the necessary need for greater efficiency other techniques of an inventive nature were developed.

A great percentage of the unfinished banner-stones show the drilling of the perforations in various stages of completion. Many show no attempt at drilling. A great number show just the start of drilling; others show a considerable amount of drilling; and occasionally specimens are noted with drilling carried so far that with a little more work the perforation would have been completed. One may be forced to believe that either something happened to the Indians who were making these objects, or they were lost before being finished.

Some years ago the writer secured a granite bipennate banner-stone from Peoria County, Illinois, near the Illinois River. This specimen was ground down to the desired shape and polished. An incompleted hole five-eighths of an inch in diameter was drilled two and one-half inches in depth, but lacking only one-eighth of an inch of being a completed perforation. It is difficult to believe that a specimen of this kind was

discarded, if we realize the time involved to bring it so near completion. The object referred to is now in The Field Museum of Natural History.

Some writers have advanced the theory that possibly many of the banner-stones were drilled only part way through purposely, believing that if the holes were made sufficiently deep they could be placed on the ends of staffs. The writer does not wish to contradict this idea from the standpoint that it could not be done, but wishes to draw their attention to the great number of specimens with drilling too shallow to permit them to be placed on the ends of staffs. Because of this last mentioned observation one cannot help being forced to disregard this theory, even though it were possible to place some of them on the ends of staffs.

It is from these interesting objects with incompleted drilling that we are able to gather fairly accurate knowledge of the drilling techniques

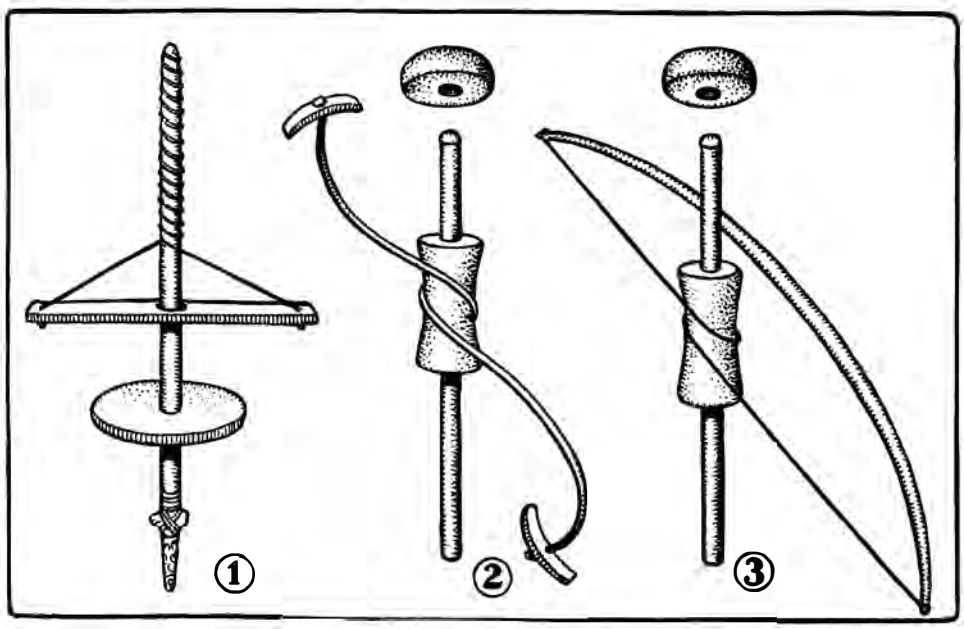


PLATE 21.

Number 1 shows the "pump" drilling method.
Number 2 shows the "pulley" drilling method.
Number 3 shows the "bow-drill" drilling method.

that were usually employed. It seems that the pump, pulley, and bow-drill methods or drilling techniques were most commonly used by the prehistoric Indians. They were the most practical and the most efficient. Plate 21 illustrates these three drilling methods by a series of pen-and-ink drawings prepared by the author.

The Eskimo still resorts to the primitive methods of drilling. For these people the pump-drill is particularly useful to drill wood, ivory, bone, and stone. It is interesting to know that many of the lapidaries of today use pump-drills for some of the delicate drilling in stone. The prehistoric Indians had also found this method of drilling to be very suitable for delicate work, and particularly useful for putting the stem-holes in pipes, for perforating pendants, gorgets, bird-stones, amulets, beads, and for many other purposes. The larger perforations, as those through banner-stones and those forming pipe-bowls, required the use of the more effective pulley or bow-drill method.

While the three mentioned drilling methods are definitely different both in arrangement and operation, the use of the drill-stick with the various drilling points was adaptable to each method. The principle of the drilling points consists of but two classes. One class employed the use of drill-points of flint or copper. Neither of these necessitated the use of sand as an abrasive for drilling softer materials.

The other class employed the use of sand as an abrasive. Solid wood drill-sticks were commonly used, one end of which served as the drilling point. Pieces of antler, leg and wing bones of large fowls, and circular bands of copper were frequently placed on the ends of drill-sticks serving as drilling points. The cane *Arundinaria gigantea* that grows throughout the southern and central part of the Banner-stone Area was most commonly used. Either the entire drill-sticks consisted of pieces of cane, or wooden drill-sticks were tipped with it.

Spindle whorls were placed upon the drill-sticks to act as a kind of fly-wheel. The writer has examined a great number of pump-drills of Eskimo craft and found them to be equipped with spindle whorls made of wood. These were thin circular discs of various sizes. Spindle-whorls are in reality extremely necessary for the operation of pump-drills. Although it may seem that they were also of some helpfulness for the operation of the pulley and bow-drill methods, the writer has found

from experiments that they were not an absolute necessity. They were however, probably used the greater part of the time for all three of the drilling methods by the prehistoric Indians.

Judging from the scarcity of spindle-whorls made of stone throughout the Banner-stone Area, we may surmise that the majority of them were made from wood which has disintegrated and disappeared. We may give as a reason for the wood construction the probability that it was easier for the Indians to fashion these objects from wood than from stone. We are very fortunate to be able to note a fairly large number made of various kinds of stone over the eastern half of the United States. These are generally flat and circular in shape with a round hole through the center for the insertion of the drill-stick. They vary greatly in size, both in measurements of the disc and also the hole. Many are decorated with encised lines, notches, and scalloped edges. It is very obvious that no other use can be associated with these objects. A number of specimens of various sizes and made of different materials and gathered from widely separated sections of the Banner-stone Area are illustrated in Plate 23.

Spindle-whorls with small holes were apparently used upon solid wood drill-sticks or drill-sticks equipped with small drill-points of flint, bone, or bits of copper. Those with larger perforations were used upon larger drill-sticks that drilled larger holes. The chapter *Ornamental Uses of Banner-Stones* pointed out in detail that the perforations in banner-stones from the Southern Area average larger in size than those found farther north. We can also verify this fact if we observe the holes in the stone spindle-whorls from these two territories.

By examining the perforations of banner-stones one will note series of lines on the side walls of the perforations, caused by the grinding sand. These lines or *striations* are more pronounced on some specimens than on others, due to the hardness of the materials from which they were made. Many show that much of the striation has been worn away by the constant insertion of the staffs.

Although it is difficult to definitely determine what method of drilling was employed from a completed perforation in a banner-stone, yet by the unfinished specimens that show incompleted drilling, we are able to detect those made by the solid stick method and those made by the hollow reed method.

Plate 22 shows a very interesting specimen from Richland County, Illinois, which was drilled from each end apparently by a solid stick. The X-ray picture on the right clearly shows the conical shaped drilling that was done from each end. This object corresponds with the one shown in Plate 9, and again illustrates my theory that it was worn ornamentally and not intended to be used on a staff; that is, of course, if it was used with this seemingly unfinished perforation. There is also a possibility that the maker intended to do more drilling which would have formed a more completed perforation.

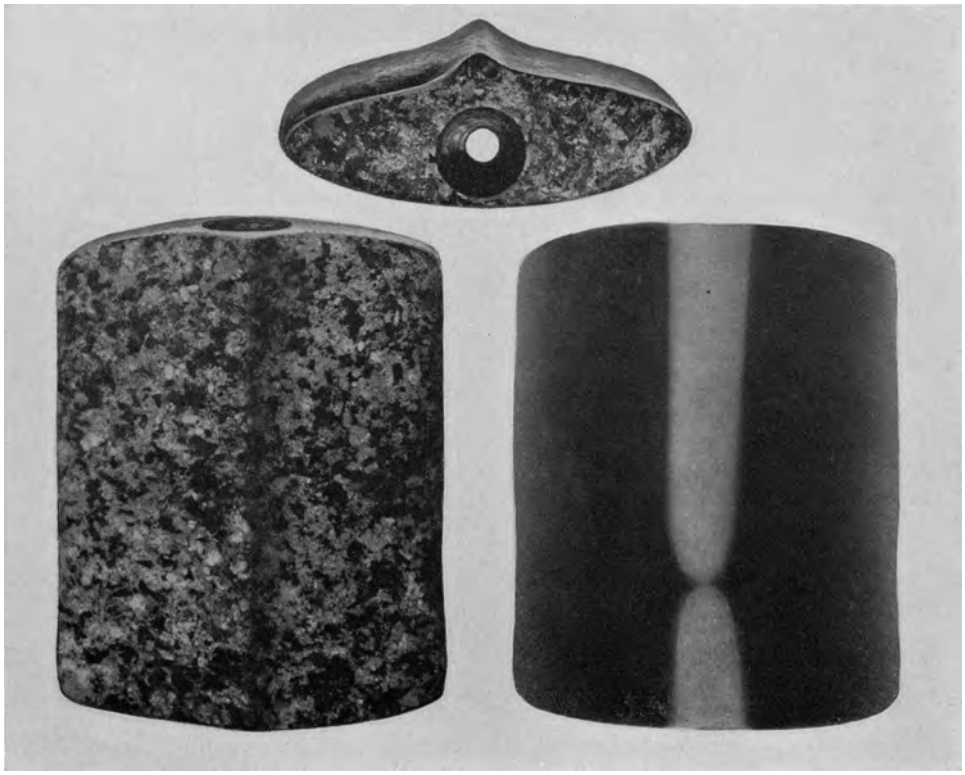


PLATE 22. This interesting specimen was found in Richland County, Illinois, 14 miles southeast of Olney in a road on the top of a hill after the road had been graded. It can be classified as a blending form of the Hinge-type Group. It was drilled from each end apparently by a solid stick. The X-ray picture on the right shows two bullet shaped holes that meet with an opening 1/8 inch in diameter. Material, mottled granite.

Plate 5/6 actual size. FROM DR. P. F. TITTERINGTON COLLECTION, ST. LOUIS, MISSOURI

EXPLANATION OF PLATE 23

SPINDLE WHORLS

Spindle-Whorls of Various Material from Widely Separated Areas

Plate 1/2 actual size

No. 1—Oconee County, South Carolina. Material, brown sand-stone, disintegrated from age. Note the incised lines on the face of the stone which were made for decoration. Diameter 2 1/2 inches, thickness 1/2 inch.
Sam M. Cathcart collection, Anderson, South Carolina

No. 2—Oneida County, Michigan. Material, red sand-stone. Found near the town of Minoequa. Diameter 2 3/8 inches, thickness 7/8 inch.
N. E. Carter collection, Elkhorn, Wisconsin

No. 3—Adams County, Ohio. Material, light gray sand-stone. Diameter 2 1/8 inches, thickness 1/2 inch. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 4—Wright County, Iowa. Material, dark red catlanite. Found near the town of Goldfield. Both sides of this specimen show drawings made with incised lines. The side displayed in this illustration shows drawings of animals, probably that of a deer. Diameter 3 7/8 inches, thickness 1/2 inch.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 5—Georgia, County unknown. Material, finely speckled gray steatite, discolored tan from age. This specimen is very unusual in shape because of the fact that both sides have a concave depression. Catalogue number 592. Diameter 3 3/8 inches, thickness 7/8 inch. *From the author's collection*

No. 6—Jersey County, Illinois. Material, cannel-coal, badly checked and cracked from age. Found near the town of Grafton. Note that this specimen has six notches on the edge, and at each notch is a series of incised lines. Any specimens made of this material are exceedingly rare. Formerly in the Capt. C. W. McKinneys collection. Diameter 4 1/2 inches, thickness 3/8 inch. *From the author's collection*

No. 7—Marion County, Missouri. Material, cannel-coal. Both sides of this specimen show a circular depression which was probably made for decoration. Catalogue number 656. Diameter 2 3/8 inches, thickness 7/16 inch.
From the author's collection

No. 8—Jackson County, Illinois. Material, reddish brown quartz. Found near the town of Popular Ridge near Cedar Creek. The side of this specimen which is displayed is concave, the other side is convex. Diameter, 2 1/4 inches, thickness 1 inch.
Irvin Peithman collection, Carbondale, Illinois

No. 9—Pope County, Illinois. Material, light tan sand-stone discolored from age. Diameter 2 inches, thickness 3/4 inch.
N. E. Carter collection, Elkhorn, Wisconsin

No. 10—Franklin County, Missouri. Material, dark reddish brown steatite, highly polished. Catalogue number 593. Diameter 3 1/2 inches, thickness 1/2 inch.
From the author's collection

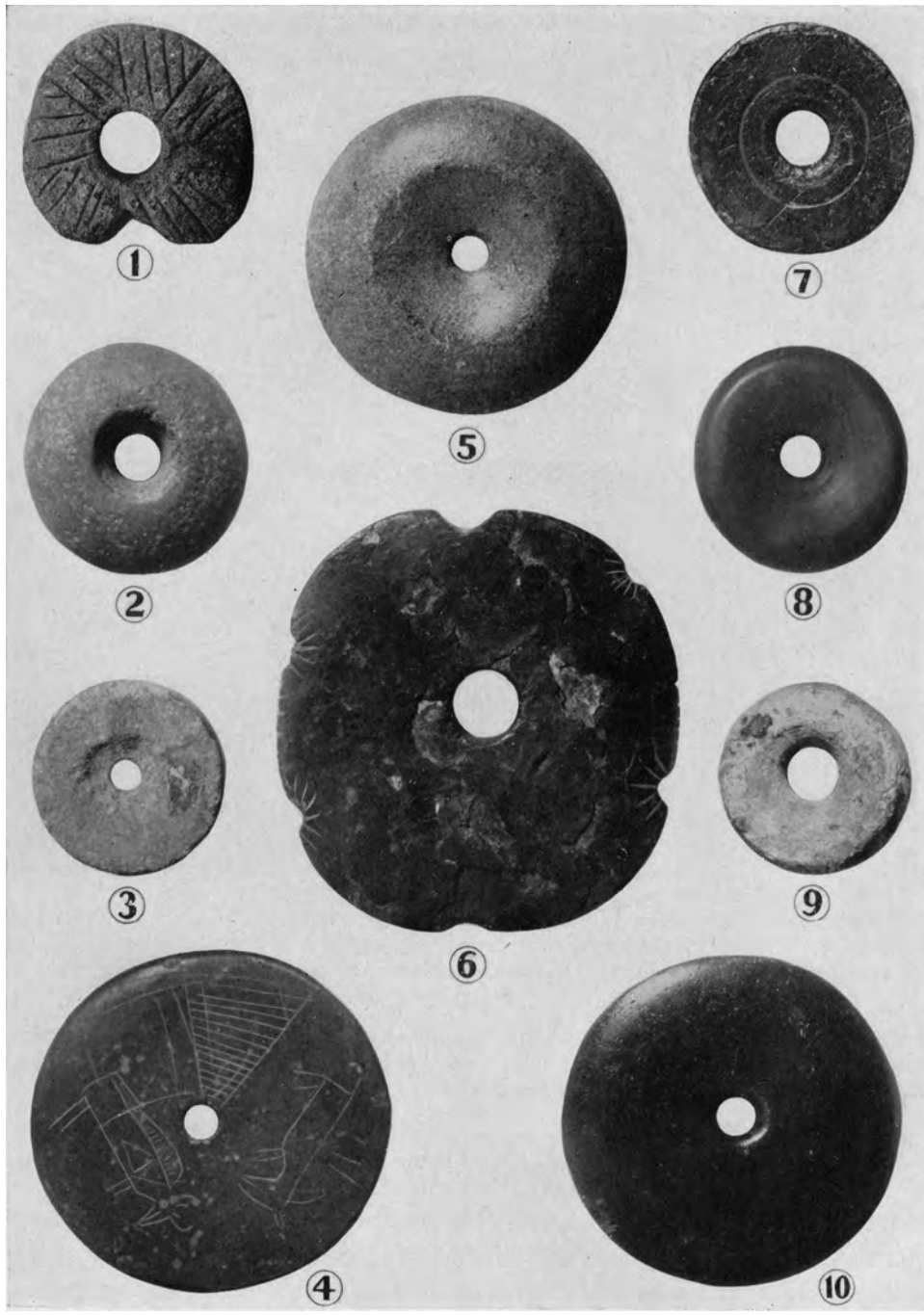


PLATE 23

Plate 24 illustrates on the left a picture of a very interesting bipennate specimen with both wings broken away. Note the circular depression with the protruding core made by hollow reed drilling. On the right of the same illustration are shown two translucent and polished crystal quartz beads from Columbia, South America, that show conical drilling which was done from each end. The drilling of the perforation through these beads was probably done with slender pieces of bone or copper, using sand as an abrasive. It is impossible for one to visualize the time and patience required to drill such hard material. Then, when all this energy was used, these objects were nothing more than mere beads. Although beautiful, they were made for but one purpose, adornment.

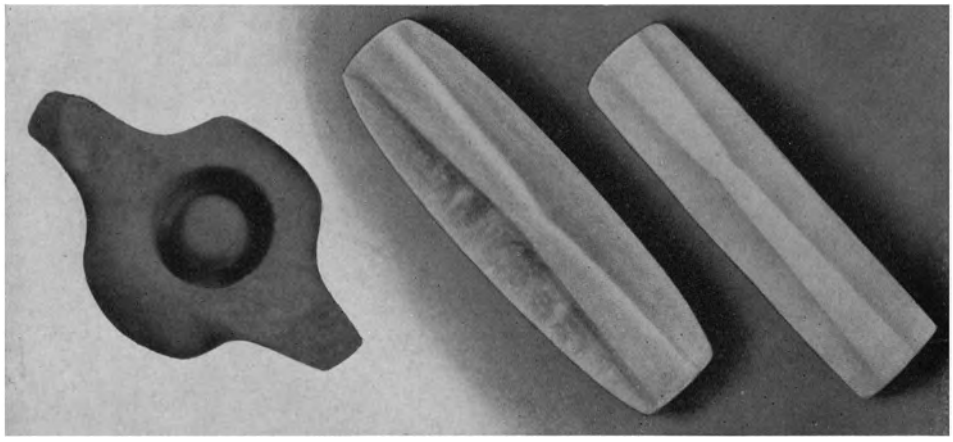


PLATE 24. The picture on the left is a spool of a bipennate form with both wings broken off. The circular depression was made by hollow-reed or cane drilling, and the protruding core is plainly shown. The material is quartzite.

FROM THE ALABAMA MUSEUM OF NATURAL HISTORY COLLECTION, UNIVERSITY, ALA.

On the right is illustrated two highly polished beads from Columbia, South America, made of translucent crystal quartz. The conical drilling which was done from each end can be seen through this translucent material.

Plate actual size. FROM THE AUTHOR'S COLLECTION

Plate 25 illustrates a very interesting bipennate specimen which appears to be completed in shape and shows considerable smoothness; yet the drilling done by hollow-reed or bone and sand is only half completed.

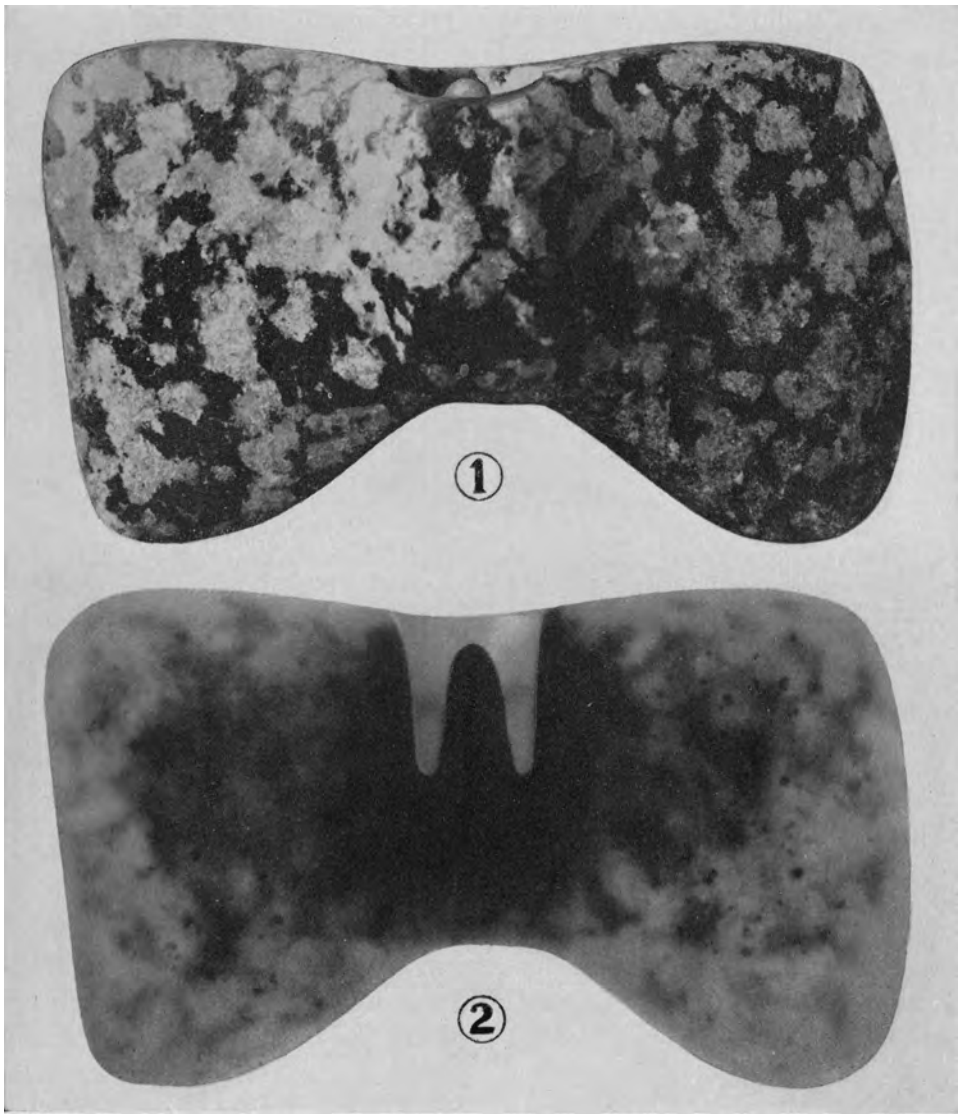


PLATE 25.

Number 1 shows a bipennate banner-stone from LaSalle County, Illinois, found near Ottawa at the edge of a gravel pit. This specimen appears to be completed in shape, and the incompleted perforation is drilled half way through.

Number 2 is an X-ray picture made by Dr. P. F. Titterington of St. Louis, Missouri. This picture shows that the perforation was being made by hollow reed or bone drilling, and the protruding core extends almost to the top of the depression.

Plate actual size. FROM THE COLLECTION OF DR. P. F. PENDERGAST, FAIRBURY, ILL.

Plate 26 illustrates two cores from hollow-reed drilling, both of which were found in the state of Arkansas. It is very probable these objects are cores from banner-stones. They are extremely rare mainly because of the fact that they are very difficult to find. The writer is indeed very proud to be able to show two cores. In the *Mississippi Geological Survey 1926*, Calvin S. Brown describes four similar but smaller specimens that were found together in a grave in the state of Mississippi.

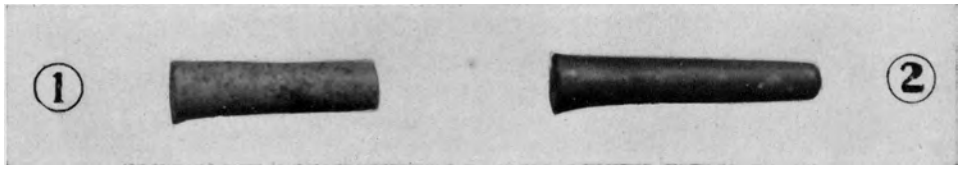


PLATE 26.

Number 1 shows a core from hollow reed or cane drilling. It was found in Faulkner County, Arkansas. The material is tan quarzite.

Number 2 shows a similar but longer specimen of green granite from Faulkner County, Arkansas. It is probable that both of these specimens are cores from banner-stones. They are extremely rare mainly because they are difficult to find.

Plate actual size. FROM THE COLLECTION OF CLAUDE U. STONE, PEORIA, ILL.

Plate 27, illustrates a very interesting *Hour-glass* type specimen made of ferruginous quartz which shows that the artisan had considerable difficulty in drilling the perforation. In this same illustration is also shown an X-ray picture of the same specimen. It clearly shows offsets made by crooked drilling. In this case, had the position of the drill-stick not been shifted after drilling one-third of the way through the stone, the drill would not have come out at the center of the other end. Later when the drilling was two-thirds of the way through, it was discovered that the drill-stick was shifted too much; and the perforation still would not come out in the center. Therefore, this particular specimen shows three distinct offsets caused by crooked drilling and by the changing of positions of the drill-stick, totaling four different drilling positions necessary to make the perforation true. This X-ray photograph is to our knowledge, the first attempt to illustrate a banner-stone in this manner.

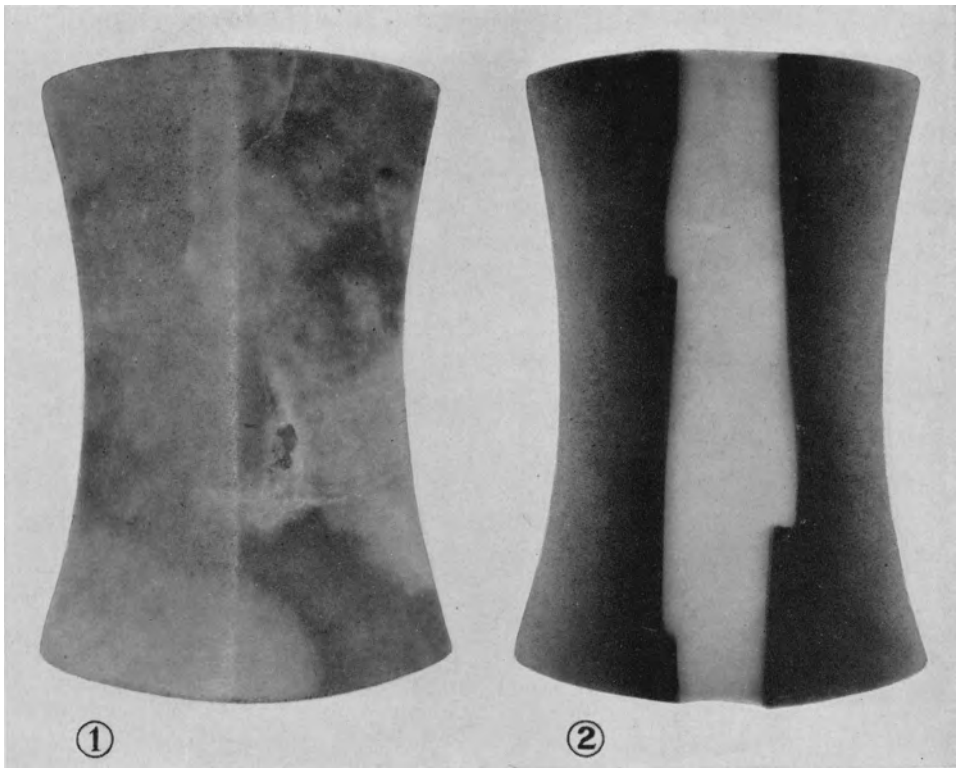


PLATE 27.

Number 1 shows a superb Hour-glass type specimen from Scott County, Illinois, found near the Illinois River. It is made of beautiful ferruginous quartz, deep red in color with clouded shades of light tan. The artisan had considerable difficulty in drilling the perforation.

Number 2 shows an X-ray picture of the specimen, made by Dr. P. F. Titterington. The end from which the drilling was started is shown at the top in this picture. Note the three distinct off-sets caused from crooked drilling, and the changing of positions of the drill-stick so that the hole would come out at the center of the other end.

Plate actual size. FROM THE AUTHOR'S COLLECTION

We can also note that the majority of the perforations made by hollow-reed drilling were started at one end and continued on through the stone. Furthermore, the perforations drilled in this manner are usually larger at one end than the other. The end that shows the larger opening is the end from which the drilling was done. The cause can be easily accounted for.

As the drill-stick revolved, it forced the excess sand upward, and in doing so it continually ground the side walls of the perforation, thus enlarging it.

Plate 28 shows a very interesting specimen of banded-slate cut parallel with the bands, and apparently was broken lengthwise by the inserted staff. The perforation of uniform width clearly shows the drilling to be comparable to machine methods of today. This particular object is illustrated mainly for a comparison with the crooked drilling of the specimen shown in Plate 27.

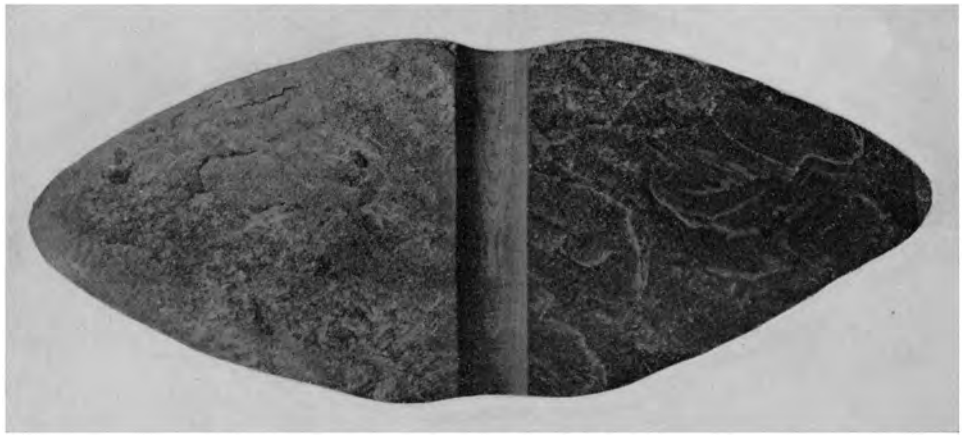


PLATE 28. This unusual specimen is from Allegan County, Michigan. It is made of green banded-slate, cut parallel with the bands. Apparently it was broken lengthwise by the inserted staff. This specimen is illustrated for a comparison with the crooked drilling shown in Plate 27. Unnotched Butterfly form. Catalogue number 646.

Plate actual size.

FROM THE COLLECTION OF WILBUR M. CUNNINGHAM, BENTON HARBOR, MICHIGAN

DRILLING QUARTZ BY MACHINE METHOD

In the fall of 1935 with the assistance of a friend, Mr. E. A. Udstad of Aurora, Illinois, a machinist, an experiment was performed to learn the amount of work and time required to drill quartz. For this experiment a deep red ferruginous quartz pebble was secured from Missouri, and it was my desire to drill a hole through it of approximately the same size as those through banner-stones from the Mississippi Valley that are made of this variety of rock.

This particular material was selected because of its extreme hardness and it was my desire to put a perforation through it in the least possible time by the most effective machine method. On a previous experiment we found that carborundum, used as an abrasive for drilling, had practically no effect upon the quartz. The problem was explained to a monument worker who informed us to use chilled steel as an abrasive of about the same texture as black gun powder. He also furnished a quantity of it for the experiment that later proved to be very satisfactory.

After a picture was taken of the pebble, each end of it was ground down until the distance between the two flattened planes was exactly three inches in length. The stone was then fastened upright in position on the drill-press. Modeling clay was then put around the outer top edge of the stone, forming a sort of cup that would hold a small quantity of water and chilled steel during the process of drilling.

The purpose of this experiment was not only to find out the time required to drill the hole, but also to learn how many revolutions would be required. By the use of a gauge the machine was set at exactly 400 revolutions per minute. There was still another very important problem to consider. We realized that during the operation it would be necessary to raise the drill at intervals in order to add chilled steel and water, or to let the abrasive settle over the spot being drilled. The raising of the drill meant loss of time and loss of grinding revolutions that should be deducted. To clarify this situation it was decided that my assistant would operate the machine for one hour, and the writer would be the time-keeper and tabulate as accurately as possible the number of seconds lost each time the drill was raised. A one-half inch hollow brass tube to be used for the drill was inserted in the chuck of the machine, and we were, then, ready to start.

With the abrasive we were about to use, however, we felt that we were better prepared for this experiment than in the previous one. The first hour of drilling proved that the total number of seconds used during the raising of the drill amounted to approximately ten minutes, leaving fifty minutes of grinding revolutions, and at the speed of 400 revolutions per minute we have a total of 20,000 grinding revolutions. Upon examining the stone, we found that a shallow circular depression had been made that measured ten sixty-fourths of an inch in depth.

It was decided that the time keeping possibly could be checked more easily and more accurately if the drilling was done at intervals of five minutes each. It was also decided that possibly 200 revolutions per minute may be more effective than 400 revolutions, and for the next experiment we would drill for thirty minutes by periods of five minutes each at 200 revolutions per minute. The stone was again placed in position on the machine and the operation started. The results of the following thirty minutes of drilling are given as follows:

First	5 minutes of drilling	28	seconds were lost
Second	5 " " "	59	" " "
Third	5 " " "	71	" " "
Fourth	5 " " "	68	" " "
Fifth	5 " " "	44	" " "
Sixth	5 " " "	28	" " "
	Total	298	seconds were lost or approximarely 5 minutes.

Thus we have twenty-five minutes of grinding time, at 200 revolutions per minute, making a total of 5000 net grinding revolutions. Measurements were again taken and the depression was three sixty-fourths inch deeper. We had found that 200 revolutions per minute did not grind as fast as 400 revolutions per minute.

The stone was again set in the machine, and as a further check the speed was set at the 300 mark. During the following half hour of drilling 242 seconds were lost, or approximately four minutes, leaving twenty-six minutes of grinding time at 300 revolutions per minute giving a total of 7800 net grinding revolutions. Measurements showed an increase of five sixty-fourths inch in the depth of the depression. This measurement proved that the higher speed of the drill was more efficient than the lower speeds. For comparison to the first hour of drilling, the two half hour experiments are given as follows:

Time	Lost Time	Speed	Net Grinding Revolutions	Depth Ground
1st hour	10 minutes	400	20,000	10/64 inch
1st 1/2 hour	5 minutes	200	5,000	3/64 inch
2nd 1/2 hour	4 minutes	300	7,800	5/64 inch

The writer was now satisfied that the time-keeping of the last hour of drilling was quite accurate, and that if nine minutes were deducted from each hour of future drilling no further time checking would be necessary. The remaining drilling was done with the machine set at 400 revolutions per minute.

Mr. Udstad, later finished the drilling of the hole in twenty-one hours and twenty-seven minutes. From this time nine minutes per hour must be deducted as lost time and lost grinding revolutions. The results are shown as follows:

DRILLING TIME

Total Time	Lost Time
21 hours and 27 minutes	9 minutes lost per hr.
x 60 minutes per hour	x 21.5 hours
1,260 minutes	193.5 lost minutes
+ 27 minutes	x 400 rev. per minute
1,287 minutes	77,400 lost grinding revolutions
x 400 revolutions per minute	to be deducted.
514,800 revolutions in 21 hours and 27 minutes	
-77,400 lost revolutions	
437,400 net grinding revolutions during the 21 hours and 27 minutes	

GRINDING REVOLUTIONS

First hour	20,000	net grinding revolutions
Following 1/2 hour	5,000	" " "
Second 1/2 hour	7,800	" " "
21 hours and 27 minutes	437,400	" " "
Total	470,200	net grinding revolutions to drill through 3 inches of ferruginous quartz.

TOTAL OPERATING AND NET GRINDING TIME

Operating Time	Net Grinding Time
First hour	50 minutes
Following 1/2 hour	25 minutes
Second 1/2 hour	26 minutes
21 hours and 27 minutes	19 hours 13 1/2 minutes
Total 23 hours and 27 minutes	Total 19 hours 54 1/2 minutes

It is interesting to note that during this experiment five and five-eighths inches of brass tubing were worn away.

Plate 29 shows the quartz pebble before the experiment was started, an X-ray picture of the same pebble after it was drilled, the four pieces of the core, a small quantity of the chilled steel used as the abrasive, and a piece of the brass tubing used in this experiment. Although the data from this particular experiment cannot in any way be used as a scale for primitive methods of drilling, it has at least furnished a certain amount of interesting information.

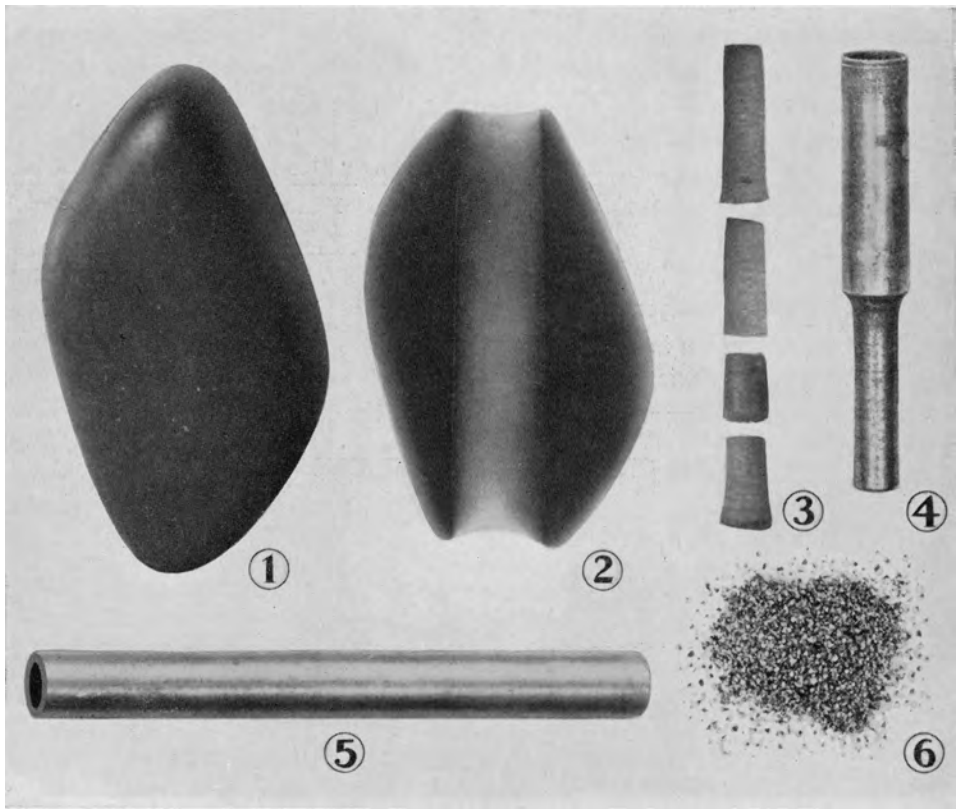


PLATE 29.

No. 1—Natural water-worn pebble of ferruginous quartz.
No. 2—An X-ray picture of the same pebble after it was drilled by machine method. X-ray picture made by Dr. P. F. Titterington.
No. 3—The core, which was broken into four pieces while drilling.
No. 4—The drill of hollow brass tubing, from which 5 5/8 inches was worn away.
No. 5—Piece of the original brass tubing.
No. 6—Chilled steel which was used as an abrasive.

DRILLING QUARTZ WITH A BOW-DRILL

But it has always been my desire to carry out an experiment of drilling quartz by the aboriginal or primitive methods in order to obtain authentic data that would be of more importance. It was probably this inquisitiveness on my part that prompted me to undertake and to carry out such an experiment in the spring of 1937, employing in this case the bow-drill method.

It was decided that the same stone which was used in the previously described experiment would be used again so that the data from the later experiment could be compared to the previous drill-press experiment. It was realized that to attempt this kind of undertaking, unlimited time and patience would be required. To lessen the task as much as possible it was decided that if a depression but one-fourth inch in depth was drilled in the side of the pebble, it would be sufficient to obtain the information necessary for the establishment of a reasonably accurate scale or gauge per inch. If a standard inch scale of this nature were established, it would then enable one to calculate the time and revolutions required to drill the perforation of any banner-stone made of this material by measuring the length of the perforation.

After considering which of the three aboriginal drilling methods to use, it seemed that the bow-drill would be the most practical for this purpose. The pulley method would require the aid of two people, one person to hold the drill-stick in place while the other would do the pulley operations.

The principle of the bow-drill is simple, and easily operated by one person. The string of the bow is wrapped around the drill-stick which is held upright in position by the capstone in the operator's one hand, while the other end of the drill-stick rests on the spot to be drilled. The bow is held in the operator's other hand, and by a sawing movement the string revolves the drill-stick.

The equipment that was used for the following experiment was easily and hastily assembled. Mr. Irvin Peithman of Carbondale, Illinois, furnished the cane to be used for drill-sticks, which he had gathered from a nearby locality.

A branch of a tree and a medium weight beeswaxed cotton cord served as a bow. The length of the taut bow-string of the assembled bow was

forty-two inches. A drill cap or capstone was easily obtained by taking one of prehistoric Indian construction from my collection. It is nothing more than a granite pebble, oval and flat in shape, with a smooth rounded depression on one side, three-fourths of an inch in depth.

A flattened plane was ground on the pebble at a selected spot where the drilling was to be done. The size of this plane was considerably larger in size than the diameter of the cane to be used for the drilling. The pebble was then fastened firmly down on a square piece of heavy board, so that it would be held stationary and in position during the drilling. It may be assumed that the prehistoric Indians were able to employ the aid of another person to hold the stones being drilled in position. Those who may have been less fortunate, however, were forced to resort to some method to fasten the stones down as the writer was forced to do.

When the drill-stick was held in position by the capstone, and strokes were made with the bow, it was found that the string would slip without revolving the drill-stick, thereby making it impossible to operate the bow-drill successfully with the bow-string wrapped around a drill-stick of cane. This is due to the highly polished surface of cane. Another possible reason may be the small size of the drill-stick which reduces the leverage to such an extent that it cannot revolve.

To increase the leverage necessitated increasing the size of the drill-stick. This was done by using an ordinary spool with the hole sufficiently enlarged to allow a piece of cane to be inserted through it and placed near the middle of the piece of cane. The spool proved to be the solution, although the number of revolutions developed by a stroke of the bow were greatly reduced. It is very plausible that the prehistoric Indian made similar spools or created other arrangements that answered the necessary purpose.

My great concern was to discover the number of revolutions that could be developed per minute and per hour by the bow-drill drilling method. This data could easily be obtained. A black mark was put on the spool and the equipment put in position with the spool at the one end of the bow by my right hand that held it, and by pulling the bow slowly back the spool revolved and traveled to the far end of the bow and the revolutions counted. The return of the spool by a forward stroke of the bow brought the spool back to the starting point with the same number of revolutions. Naturally the revolutions developed depended

entirely upon the length of the bow, and the diameter of the drill-stick used. As the length of the bow the writer was using allowed a full arm's length stroke to be made, a larger bow would not have been more efficient.

The bow and the spooled drill-stick used developed eleven revolutions by a single stroke and twenty-two revolutions by a forward and backward or full double stroke. It was also difficult through lack of experience to make each stroke of the bow a full length stroke. Some of the strokes were a bit short. The short strokes were estimated to bring about only twenty revolutions. Therefore, the average number of revolutions per double stroke was set at twenty-one.

It was decided that the experiment would be carried out by five-minute periods. The time was checked while the bow-drill was being operated, and the strokes were counted simultaneously. Although the experiment that followed was only continued for one hour and fifteen minutes, it was my full intention that its data would be used as part of the data of the drilling of the one-fourth depression.

It was soon discovered that the writer was not accustomed to this sort of thing and was indeed very awkward. The string of the bow would run off the spool, or the drill-stick would slip out of the capstone, and the whole equipment would seem to fly apart in a helter-skelter manner. It was then a scramble to gather up the equipment and assemble it into position again in the least possible time. During this confusion the time went on. For this reason the first attempt was discontinued.

During the first attempt at drilling, water was used with the sand. It is interesting to know that it was soon discovered that water prevented the sand from grinding by this process. Within a short period of time the hard hollow-reed or cane would become pulpy and would ride itself upon the stone. The sand would also imbed itself into the pulpy end of the cane and would only create a high polish upon the stone. Yet the idea seems to exist that water was used with sand by the prehistoric Indian for drilling. After this experiment, the writer is inclined to believe that this theory was formed without checking to see if it were true, because when dry sand was used with a dry piece of cane, there was a marked difference in the grinding efficiency of this arrangement. The results of the one hour and fifteen minute experiment is given as follows:

TABLE OF TIME AND REVOLUTIONS DEVELOPED

First	5	minutes	140	complete	double	strokes	were	made
Second	5	"	153	"	"	"	"	"
Third	5	"	175	"	"	"	"	"
Fourth	5	"	170	"	"	"	"	"
Fifth	5	"	177	"	"	"	"	"
Sixth	5	"	208	"	"	"	"	"
Seventh	5	"	212	"	"	"	"	"
Eighth	5	"	212	"	"	"	"	"
Ninth	5	"	245	"	"	"	"	"
Tenth	5	"	217	"	"	"	"	"
Eleventh	5	"	218	"	"	"	"	"
Twelfth	5	"	245	"	"	"	"	"
Thirteenth	5	"	220	"	"	"	"	"
Fourteenth	5	"	227	"	"	"	"	"
Fifteenth	5	"	240	"	"	"	"	"

Total 3,059 complete double strokes

x 21 revolutions per complete stroke

3,059

6,118

Total 64,239 revolutions in 1 hour and 15 minutes

According to the above figures 856½ revolutions were averaged per minute. The lack of the bow-drill operating experience can be observed by checking over the number of strokes made during the different five minute periods. One can also note the increasing number of strokes of these periods as they continue toward the end of the experiment. During this time a shallow circular depression was made in the stone.

During the drilling in this experiment, the pebble had slipped out of position because it was not fastened absolutely securely to the board. It was also impossible to hold accurately the drill-stick in an upright position, and the point at the desired spot. Therefore, because of this shifting of the drill-stick the shallow depression became oval in shape. This is another reason why this experiment was discontinued, and preparations were made to begin operations anew.

It was not long, however, before the writer through more experience had acquired the ability to operate the bow-drill without encountering any accident. Faster and longer strokes were made, with the ability to travel the spool from the thumb to the far end of the bow, and return it to the thumb, by a double stroke.

ESTABLISHING THE ONE INCH TABLE FOR THE DRILLING OF FERRUGINOUS QUARTZ WITH A BOW-DRILL USING HOLLOW REED AND SAND

In the fall of 1937 preparations were made to begin the second experiment of drilling quartz with a bow-drill using pieces of cane *Arundinaria gigantea* for drill-sticks and sand as an abrasive. The writer was determined to drill a depression one-fourth inch in depth in the same pebble of ferruginous quartz which was used for the previously described experiments.

The first attempt to drill in such hard material by this primitive method was discontinued shortly after the experiment began mainly because of lack of experience. Although the first experiment was a failure it was not a total loss. Much was learned during this short time. The writer was confident that with the practice he now had this task could be accomplished by persistent drilling and sufficient patience.

If a depression was made one-fourth inch deep in this stone the one-inch table for the drilling of quartz by this method could be established. Time required to do this amount of drilling could also be included in this table.

The equipment used during the first attempt at drilling quartz with a bow-drill was assembled rather hastily and half haphazardly together. Better and more efficient equipment was greatly needed, which could withstand the many hours of drilling to complete this task.

Probably the most needed article was a better bow. A strong hickory bow, some forty-four inches in length and of Indian make, was secured. This bow was restrung with a heavy linen cord which was the same kind of material as that used by archers. Naturally, it was believed that such cords would be strong enough to withstand many hours of service. But later it was discovered that these cords became worn and were easily broken within a couple hours of drilling.

Another flat plane was ground upon the stone, this time upon the flat side of the pebble, and it was again fastened firmly down to the board. It seems that it was a general custom for the Indians to indent by packing a shallow depression on the ends of banner-stones before the drilling was started. These indentations were made not only for a start but also to hold the drilling end of the drill-stick in place.

In order to facilitate the accurate measurement of the depth of the depression to be drilled, it was necessary to do the drilling upon a smooth surface having no indentation. It was therefore, very necessary to devise some means to hold the drill-point in place. A block of wood a trifle higher than the stone was fastened by its side. A heavy wire was bent to form a circle just large enough to permit a piece of the cane to pass through. The two ends of the wire were then brought to an angle of forty-five degrees and were tacked down on the block. The circled wire was placed directly over the smooth area of the stone about one-eighth of an inch above it. As soon as a depression was drilled deep enough to hold the drill-stick in place, this block with the guide wire could be removed.

The stronger bow and the heavier and more sturdier cord gripped the spool of the drill-stick more tightly when wrapped around it; thus one was permitted to increase the pressure upon the top of the drill-stick. Furthermore, the longer bow permitted one to develop easily twenty-four complete revolutions by a full double stroke of the bow. Everything was now ready to begin the second experiment.

It was my desire to keep a very accurate account of the grinding revolutions and the time during this experiment. The drilling was begun by operating the bow steadily for five minutes, during which time the strokes were counted and then tabulated. After a short rest operations were again resumed under this same arrangement. After several hours of actual drilling a shallow depression of approximately one-sixteenth of an inch was made and the guide wire which held the drilling end of the drill-stick in a stationary position was removed. After resuming the operations without this guide wire, it was discovered that the depression was sufficiently deep to hold the drilling end of the cane drill-stick in place, preventing it from jumping out.

By this time two of the heavy linen archery bow-strings became worn and broken. A number of heavy beeswaxed cotton cords were also broken. There was a great need for a more substantial bow string.

A long piece of rawhide (commonly called wang) about one-eighth of an inch in thickness and the same dimension in width was secured at a harness shop. This piece of wang proved to work very satisfactorily as a bow-string because it lasted throughout the entire remaining drilling time that followed to complete this experiment.

Later in the fall, the writer made a trip to Quincy, Illinois, to resume this work with the assistance of a good friend, Mr. B. W. Stephens. During this stay great progress was made. The interest and many hours of hard work which Mr. Stephens so willingly contributed during the time we worked together to complete this experiment are greatly appreciated by the writer.

The writer had by this time many hours of experience and was able to operate a bow fairly well; while Mr. Stephens, who had no previous experience, was naturally rather slow and awkward in the beginning. It was not long, however, before he was able to operate the bow with speed and accuracy.

The drilling was done by the usual five-minute periods. While the writer would drill steadily for five minutes my assistant would hold the drill-stick in an upright position by the cap-stone and check the time. The strokes were then tabulated. Then it was my assistant's turn to drill for five minutes. It was not long before we devised an arrangement to hold the drill-stick in an upright position, thus eliminating the necessity of holding the drill-stick with the cap-stone. A piece of wood about one inch in thickness and three inches in width and two and one-half feet in length was fastened by hinges to the wall over the work bench. When the hinged piece of wood was dropped to a horizontal position it rested upon the top of the drill-stick. A weight was hung upon the end of this piece of wood which extended past the work bench. A depression was made in the wooden brace at the spot where the drill-stick rested and a piece of indented tin was tacked in place. This tin lined depression served as a cap-stone, and the weight furnished the pressure. This arrangement worked very well. At any time the drill-stick could easily be raised so that sand could be added. This was done by raising the piece of wood which was fastened to the wall by the hinges.

After many hours were spent at the task of drilling there were still many more hours of drilling to be done before the experiment would be completed. The depression was, by this time, a little over one-eighth of an inch in depth. Operations were then temporarily discontinued.

In the spring of 1938 the writer made a rather elaborate portable outfit for drilling. A short time later another trip was made to Quincy, Illinois, and again work was resumed with the use of this outfit. The only alterations made upon the original apparatus were the addition of two upright

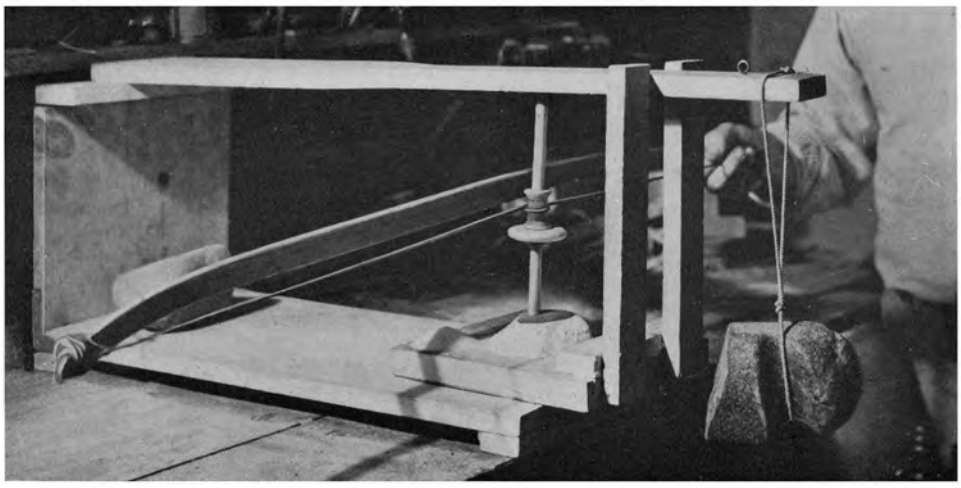


PLATE 30.

This picture shows the drilling outfit which B. W. Stephens and the writer used during the experimental drilling. The picture was taken during the operations, and the mechanical features can easily be understood. The bow, the spooled drill-stick of cane, the quartz pebble being drilled, and the broken Indian axe which was used for the weight are plainly shown. Mr. Stephens is holding the bow in position for drilling.

sticks at each end holding more firmly the horizontal hinged brace which held the drill-stick in a stationary upright position. Without these two braces there would have been a slight play if the bow were drawn back and forth. Plate 30 shows this outfit in operation.

Mr. Stephens and the author are thoroughly convinced that the prehistoric Indians had resorted to similar inventive contrivances for the drilling of banner-stones and other objects which required lengthy and accurately drilled perforations. If observations are made of the well executed perforations through many banner-stones, one is easily convinced that the prehistoric Indians possessed some arrangement to hold steadily the drill-stick in an upright position and to keep stationary the objects being drilled.

Many of the *Tubular* objects of banded-slate from the state of Ohio are seven and eight inches in length, and the perforations through them were drilled so skillfully that their roundness and straightness are almost comparable to that of a rifle barrel. To drill a perforation so true without

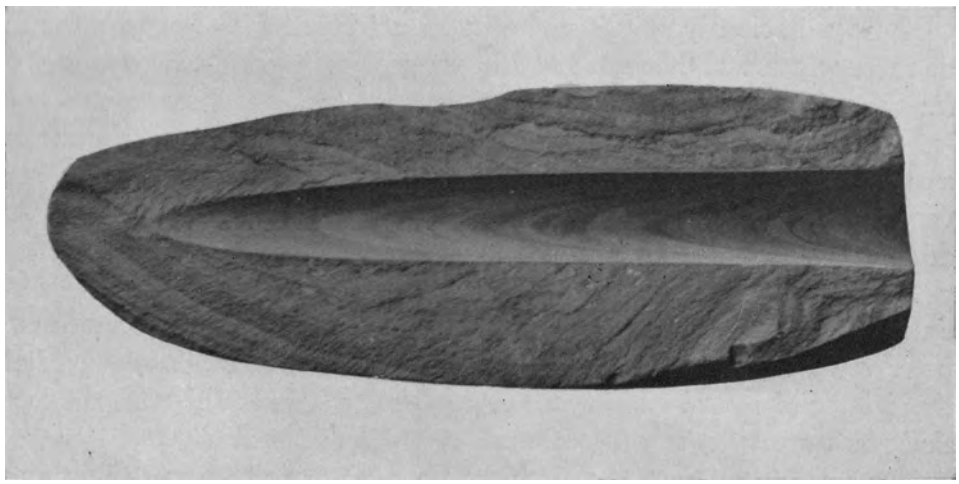


PLATE 31.

This picture shows a Tubular object which was broken lengthwise through the perforation, and shows how accurately the drilling was done.

Undoubtedly the perforations that are drilled this true, were made with the aid of some inventive contrivance assembled together with pegs and rawhide or sinew.

Plate actual size. FROM THE AUTHOR'S COLLECTION

the aid of some inventive contrivance is impossible. The least wobble of the drill-stick would make the perforation lopsided and also untrue. For this reason one is forced to believe that such perforations were not drilled by revolving the drill-sticks between the palms of the hands, or by holding by hand the drill-stick in position with a cap-stone.

Plate 31 shows a very interesting specimen which was broken lengthwise through the perforation. Note that this perforation was drilled perfectly true. There is not visible any variation in the diameter of the drilling. It is very apparent that to drill a perforation so true could only be accomplished with the use of some apparatus to hold the stone and the drill-stick in a stationary position.

Although the apparatus which we used was made with boards and put together with nails and screws, there is no doubting that the prehistoric Indians were capable of making similar apparatuses from wood, which were fastened together with pegs and rawhide. Furthermore, many other differently designed inventive drilling apparatuses were also made by the aborigines, which probably worked as well as the mechanism that we used.

Many differently sized weights were used during the experiment to discover which was the most suitable. A large broken Indian axe weighing six pounds seemed to be the most efficient.

From the start a fine pure white commercial quartz sand of uniform small sized grains was used as an abrasive. This sand seemed to work very well. Nevertheless, many other kinds of sand were also used to discover which was the most effective. Flint was pounded up into fine particles and sifted through a small mesh strainer. The very fine grains of crushed flint worked quite well. But, when the larger grains were used, there was a tendency for them to lie on the bottom of the depression and the drill-point would slide over them. The reason for this was the fact that the larger particles were in reality small flattened slivers.

Quartz crystals from the center of a geode were also pounded up into fine grains and sifted. Only the very fine crushed quartz sand could be used. If, however, the larger particles were used, we discovered that they would become lodged between the inner part of the hollow reed and the core, thus grinding only upon the side walls of the core. Finally it was decided that only the fine commercial quartz sand and the fine crushed quartz sand which we made, worked most effectively. It was certain that the large sized grains of sand were not practical. Under a magnifying glass the commercial sand was more rounded and the surfaces more smooth, while the pounded up quartz sand was more irregular in shape and the surfaces had sharper edges.

To operate a bow-drill for any length of time is very fatiguing, especially when long and fast strokes are made. It was decided that if the five-minute operating periods were reduced to one-minute periods neither of us would become so tired. Approximately the last five hours of the fifteen hours of drilling time were done in one-minute periods, which proved to be less tiresome. By this arrangement two people could easily do this sort of work for many hours without becoming exhausted. During the drilling a very shrill whistling noise is created.

About the middle of the experiment some wall plaster was put around the quartz pebble to hold it more firmly to the board to which it was attached. There was now no chance of its slipping out of place even a fraction of an inch.

Several differently sized spindle-whorls were made from wood, ranging

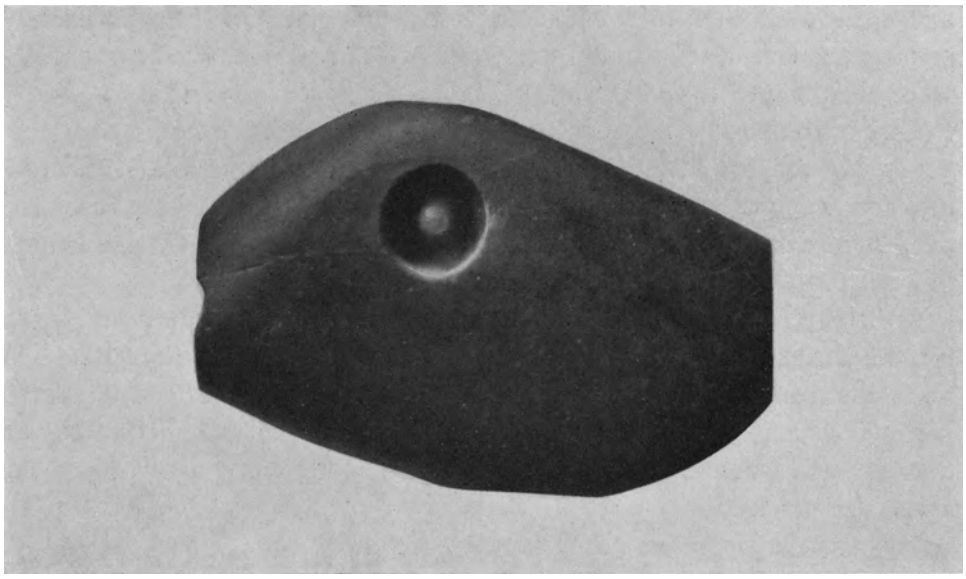


PLATE 32.

This picture shows the one-fourth inch depression in the pebble of ferruginous quartz which B. W. Stephens and the writer drilled with a bow-drill, using cane for a drill-stick and fine quartz sand as an abrasive. Fifteen hours of actual drilling time was required. During this time, 1,629,480 grinding revolutions were developed. Note the protruding core is plainly visible.

Plate actual size. FROM THE AUTHOR'S COLLECTION

in size from two and one-half inches to five inches in diameter. After these had been tried out, we found that the smallest sizes seemed to be the most useful. It was discovered that when a forward stroke of the bow was made, it was impossible to instantaneously stop the momentum of the drill-stick, and reverse its motion by a backward stroke of the bow, because of the speed by which the heavy spindle whorls traveled. It was necessary to pause at each single stroke in order to allow the momentum of the larger spindle-whorls to stop.

By this time the depression was nearing the depth of one-fourth inch. There was an urgent need for something to measure the depression accurately. A very useful tool was made for this purpose. This tool was made from a bar of steel about three inches in length, one-fourth inch in thickness and one-half inch in width. To the bar on the one-fourth

inch plane near each end were added two steel pegs. One peg was exactly one-fourth inch in length and the other peg one-half inch in length. We were also furnished with a steel gauge 1/1000 of an inch in thickness. By the use of these tools, measurements could be made with extreme accuracy.

It was on July 1, 1938 that the experiment was completed. The depression was exactly one-fourth of an inch in depth. A picture of the depression which was made in this pebble of ferruginous quartz is shown in Plate 32. The core is plainly visible.

During the fifteen hours of drilling seven pieces of cane were used for the drill-sticks. Occasionally these drill-sticks became cracked, and were then discarded. The length of each piece of cane was tabulated before it was used, and after it was discarded. The measurements showed that six and three-quarters inches of cane were worn away from the seven drill-sticks.

It was decided that the total time of drilling be grouped together into one hour time periods and arranged in a table, including also the number of complete double strokes of the bow that were made in each of these periods. These one hour periods were arranged in order, starting with the first sixty minutes of drilling time and ending with the last sixty minutes of drilling time.

Before the table is presented, it may be well to mention that there is a vast difference in these figures. As the operations progressed, increased number of strokes were developed through experience. Thus the later figures range much higher than those in the earlier part of the table.

It may also be well to mention that the least number of strokes made in five minutes was 205 which developed 4,920 revolutions. These strokes were made in the early part of the experiment. The highest number of strokes made in five minutes was 440, which developed 10,560 revolutions. These strokes were made during the latter part of the experiment. After considerable experience, Mr. Stephens or the writer was able at any time to develop easily and without much effort 10,000 revolutions and more within five minutes of drilling.

The total time and number of revolutions which were made during the drilling of the one-fourth inch depression in this extremely hard material, ferruginous quartz, are given in the following table:

ONE INCH TABLE FOR THE DRILLING OF QUARTZ

First	hour 2,965	complete double strokes were made
Second	" 3,250	" " " " "
Third	" 4,030	" " " " "
Fourth	" 3,855	" " " " "
Fifth	" 4,290	" " " " "
Sixth	" 5,530	" " " " "
Seventh	" 4,588	" " " " "
Eighth	" 4,957	" " " " "
Ninth	" 4,917	" " " " "
Tenth	" 5,011	" " " " "
Eleventh	" 5,002	" " " " "
Twelfth	" 4,998	" " " " "
Thirteenth	" 5,041	" " " " "
Fourteenth	" 4,968	" " " " "
Fifteenth	" 4,493	" " " " "
Total	67,895	Revolutions per complete stroke
	x 24	
Total	1,629,480	Revolutions required to drill 1/4 inch in quartz
	x 4	
Total	6,517,920	Revolutions required to drill one inch in quartz, requiring 60 hours of actual drilling time, during which time 27 inches of cane would wear away

DRILLING IN BANDED-SLATE WITH VARIOUS TYPES OF DRILL-POINTS

After the experimental drilling of ferruginous quartz was finished and the one inch table established, Mr. Stephens and the writer decided to do some experimental drilling in banded-slate. We also decided to drill in this material with different types of drill-points, including drill-sticks of cane, solid wood, and flint-drills.

The main purpose for drilling with these three different drill-points was to discover which one was the most useful to the Indians for the making of the perforations through banner-stones. Furthermore, we wished to establish a one inch table for the drilling of banded-slate by using the most practical drill-point.

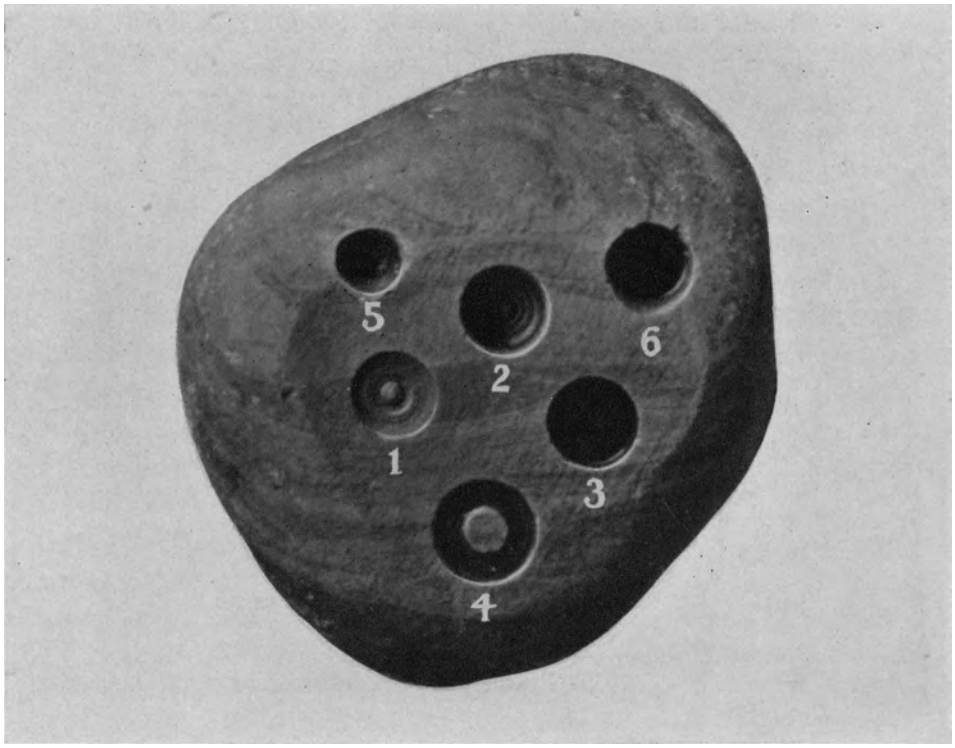


PLATE 33.

This picture shows the series of depressions which were drilled in this pebble of banded-slate with a bow-drill using various types of drill-sticks. Descriptive data for each of the numerated depressions is given in the table on the opposite page.

Plate actual size. FROM THE AUTHOR'S COLLECTION

The writer conceived the idea to do all of the experimental drilling on one piece of stone which could then be illustrated by a single plate. A water worn pebble of banded-slate from the state of Michigan was selected for this purpose. One side of this stone was ground down to form a large flat plane. Upon this smooth flat surface the drilling would be done.

Before attempting to drill in the pebble which was to be used for the illustration some preliminary drilling was done on another piece of banded-slate. The preliminary drilling, which was done with a drill-stick of solid wood, consisted of a shaft of hard maple three-eights of an inch

in diameter. It was soon discovered that this wood was too soft and the drilling end of this drill-stick wore away very quickly, thus making a conical shaped depression in the stone.

A new drill-stick was made from a hickory hammer handle. This handle was turned down on a lathe until it became a straight shaft three-eighths of an inch in diameter. It was discovered that the hickory drill-stick made a depression twice as deep as the depression made with the maple drill-stick, and in the same length of time.

The stone to be used for the illustration was fastened firmly to the bottom of the drilling outfit; we were now ready to drill in this stone. The results of the experiment that followed proved to be very interesting. A series of depressions of different depths were made in the banded-slate pebble with the three mentioned drill-points. The depth of each depression was governed by the time devoted to the drilling. Dry, finely crushed quartz sand was used for the abrasive with the drill-sticks of cane and solid wood. There was no water used with the flint-drill, because this type of drill-point grinds away the stone very fast and the water with the powdered slate forms a paste.

Plate 33 shows a picture of the pebble after the experiment was completed. Each depression is identified by a number. The time devoted to drilling, the number of revolutions developed, and the depth of each depression are arranged separately in a table, as follows:

DRILL-STICK OF HICKORY

Depression	Time	Revolutions	Depth
No. 1	5 minutes	9,976	shallow
No. 2	15 minutes	30,168	1/4 inch
No. 3	90 minutes	177,552	1 inch

DRILL-STICK OF CANE

Depression	Time	Revolutions	Depth
No. 4	30 minutes	58,800	1/8 inch

DRILL-POINT OF FLINT

Depression	Time	Revolutions	Depth
No. 5	1 minute	2,040	1/5 inch
No. 6	9 1/2 minutes	17,888	1/2 inch

It was rather amazing to discover that only one and one-half hours of actual drilling time were required to drill a perfectly well formed hole in banded-slate with sand and a solid wooden drill-stick. According to this experiment the perforations through many of the lengthy Tubular objects were made in a comparatively short time.

During the drilling of the one inch hole, the end of the hickory drill-stick continually became rounded and the depression became rather bullet shaped. This situation was easily rectified by frequently cutting off the rounded tip of the drill-stick. The drilling of the hole shown under No. 3 is comparable to the drilling of the perforation shown in Plate 31.

Throughout the entire experiment the drilling was done in one minute periods. Usually after each period the sand, pulverized wood, and powdered slate were blown out of the depression and a small amount of fresh sand was added. This procedure greatly increased the efficiency of the grinding.

The flint-drills proved to be more effective upon banded-slate than any other type of drill-point. Within one minute a rather deep depression can be made in this material. A pendant or gorget one-fourth inch in thickness can easily be perforated within two minutes by drilling from each side. But only conical shaped depressions can be made with flint-drills. Furthermore, this type of drill-point is useless for the making of long holes. It has been discovered that after a depression is made one-half an inch in depth, the flint-drills will frequently break and shatter even though much precaution is taken. The three types of drill-sticks, with the spools and spindle-whorls attached, which were used during these experiments are shown in Plate 34.

The perforations through many banner-stones of banded-slate were drilled from each end with flint-drills. The opening from each end of the specimens drilled in this manner are of a conical shape, and the opening in the middle of the stone is small. These openings were too small to allow them to be placed on the ends of staffs. For example: the specimen illustrated in Plate 9 was drilled from each end with a drill-stick tipped with flint. It is very probable that the maker of this object had intended to ream this perforation out with a drill-stick of solid wood.

Some of the specimens drilled in this manner were probably considered finished and were worn ornamentally on a necklace or in some

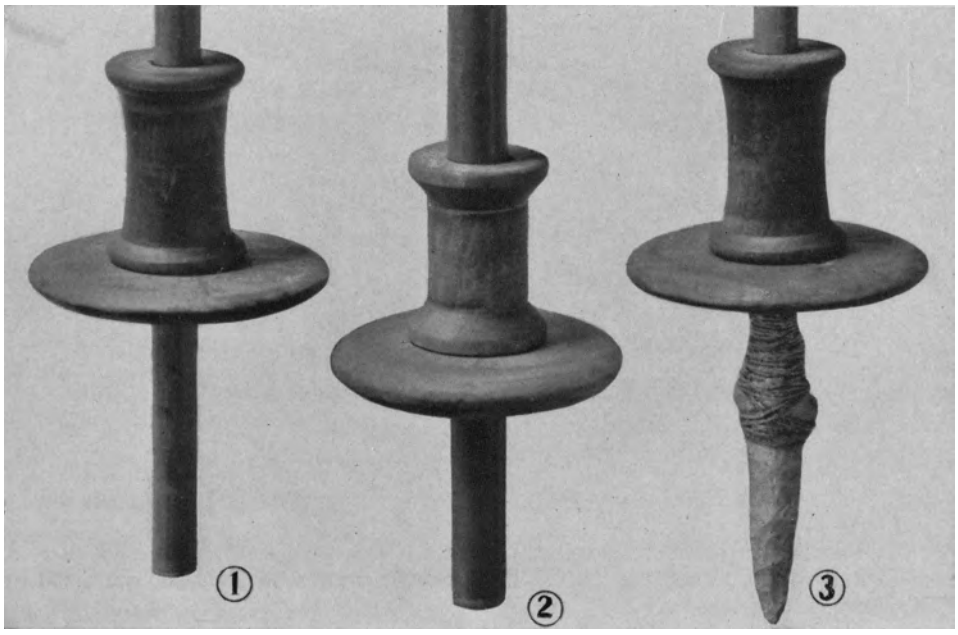


PLATE 34.

This plate illustrates the three different types of drill-sticks which were used during the experimental drilling of banded-slate. Note that each drill-stick is equipped with a spindle-whorl of wood and a spool upon which traveled bow-string.

No. 1—Drill-stick of solid hickory wood.

No. 2—Drill-stick of cane (Arundinaria gigantea).

No. 3—Drill-stick of wood tipped with a flint-drill.

other fashion, while others were undoubtedly considered unfinished. It was probably intended to enlarge the perforation of those regarded as unfinished so that they could be placed upon the ends of staffs.

Many of the banner-stones of banded-slate were drilled first with flint drills and then the conical shaped drilling was reamed out with a drill-stick of solid wood. A number of these stones have been examined which demonstrated that this procedure was taken. Recently the writer observed a specimen in the state of Michigan which showed a conical hole at one end, while the conical hole at the other end was partly reamed out by the use of a drill-stick of solid wood. By this procedure the perforations through banner-stones of banded-slate material were probably drilled faster than when only drill-sticks of solid wood were used.

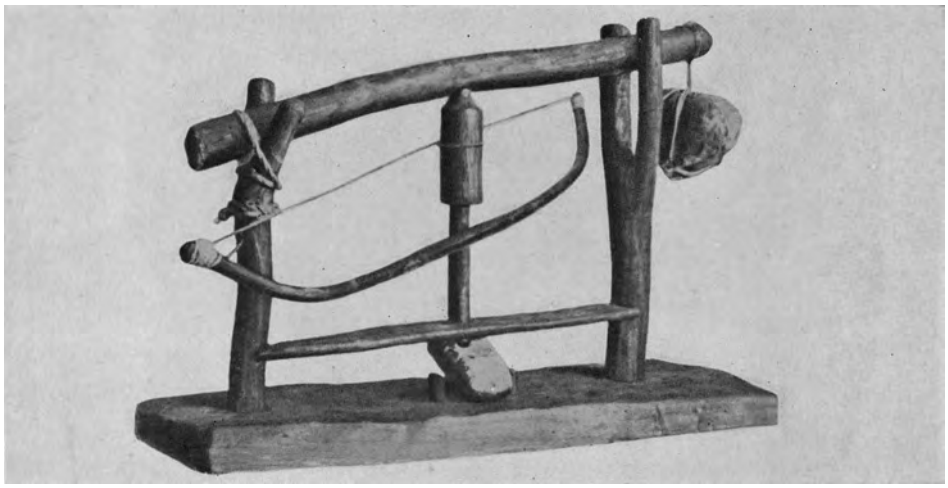


PLATE 35.

The drilling apparatus shown in this plate is a reconstruction of those which were used in Europe some 5,000 years ago. This reconstruction was made and described by Prof. George Lechler.

In the spring of 1938 when the writer designed and built the drilling apparatus shown in Plate 30, it was his intention to also build another similar apparatus from pieces of limbs of trees, assembled together with pegs and cords. It was believed that apparatuses with these mechanical features, and built in this manner, were similar to those used by the ancient aboriginies of North America.

But in the fall of 1938, the writer accidentally discovered that Prof. George Lechler* had described in his book *5,000 Years German Prehistory*, a drilling apparatus he built, which was similar to the one the writer intended to build. The mechanical features of this reconstruction were based upon observations and finds, dating back some 5,000 years ago. The above plate was reproduced from the above mentioned publication.

It is interesting to note that the mechanical features of the reconstruction are identical to the drilling apparatus shown in Plate 30. It is very obvious that the need of better efficiency had influenced the people of 5,000 years ago, as well as the prehistoric Indians, and also the writer, to build drilling apparatuses in the most simple and practical manner.

*Lechler, George: *5,000 Years German Prehistory.* Leipsig, Germany, 2nd edition, 1937.

EVOLUTION OF TYPES

During the many years devoted to the study of cultural materials of the prehistoric Indians, the writer's interests were directed more and more to the banner-stones.

Many years ago, it was discovered that much could be done toward the establishment of a more accurate and a more complete classification of these problematical stones. At that time it became my desire to discover the origin of these objects, and also some day to attempt to classify the variations of banner-stones as thoroughly as possible.

An effort was made on my part to become thoroughly familiar with the great number of modified patterns, and to be able to know in what section of the country the differently designed patterns occur. It was realized that it was absolutely necessary to obtain this knowledge before any attempt could be made to fulfill such a task scientifically.

It has always seemed to be a pity that those who are interested in the archaeology of the American Indian have not been able to refer directly or accurately by name to the different shapes of banner-stones. This predicament can easily be accounted for. The deficiency is due mainly to the fact that no one had created a complete classification of these objects.

It is amazing how confused many of the collectors of Indian relics are, and we may also include the archaeologists who are associated with museums, when it is necessary for them to refer to certain shapes of banner-stones by name. It is not uncommon to note a single pattern that is referred to by a number of names. One party will refer to a certain pattern by one name, and another party will refer to the same pattern by some other name. This situation is very confusing. Furthermore, many of the names that are so used are inappropriate and very unbecoming.

To illustrate this situation, it may be well to quote some of the unbecoming terms. For example: a curator of a large university museum, on one occasion, to my amazement, referred to a *Knobbed Lunate* banner-

stone, as a "crutch stone." Other parties frequently refer to *Geniculate* patterns as "bayonets." The *Wisconsin Winged* type specimens are occasionally referred to as "bow-ties." It is unnecessary to mention more of the self adopted names. To use the word nickname for these terms may be more suitable.

Although the writer has traveled over some fourteen states and has visited the majority of the collections in each of these states, he regrets at this time that these observations were not extended over an even larger area. Other information, however, was obtained through correspondence and also by the photographs that were furnished by many of the museums and private collectors located in the remaining states of the Banner-stone Area in which he has not visited. The result of this research has revealed many designs that apparently were not classified or described in any book. The writer has taken the liberty to name these newly discovered specimens. It is hoped that the names adopted for their classification will be accepted and regarded as being very appropriate for the designs.

The selling of the late E. W. Payne collection furnished the writer a splendid opportunity to study almost six hundred banner-stones. The sale was held in Springfield, Illinois, starting on August 15, 1935. A number of days were necessary to carefully classify and tabulate the banner-stones that were displayed. In this collection many interesting and rare specimens were noted. Many of those observed were patterns that the writer had hoped to find, for they were needed to complete a sequence so necessary to establish the evolution and classification of some of the newly discovered types.

EARLY ORIGIN THEORIES

By referring to some of the early publications which dwell on the origin of banner-stones, one can note that some of the opinions advanced by the early writers may seem far-fetched today. After noting the source from which these writers based their theories, one is convinced that different views should be adopted.

It may be wrong for one to try to discredit theories advanced years ago but there is no reason why this liberty cannot be taken. One must

discard unsatisfactory theories and formulate more plausible ones only after one discovers that substantial evidence exists to permit the forming of a new theory which is possibly more logical or plausible. It must be realized, however, that the early writers on this subject were handicapped by the limited amount of cultural material which was available for study. Had these writers lived today, their views would probably be entirely different. A number of the theories advanced early in this field pertaining to the origin of banner-stones will be quoted, as follows:

About twenty years ago Prof. W. H. Holmes, director of the United States Natural Museum, in one of his publications advanced the theory that the bipennate banner-stones which are found in the New England Area possibly were copied from the European double-edged holed axes. Dr. Holmes suggests that during the 620 years separating the discovery of Vineland and the arrival of the Pilgrims such a specimen from Europe may have come into existence among the Indians. There are several reasons why one should disregard this theory at this time. These reasons are discussed in the following paragraphs.

The European holed axes consist of but two distinct different types. The most common are those that are rather wedged-shaped, quite large, and thick. An end view of these axes are somewhat triangular in shape, and have a large hole for the handle. This type of axe has no resemblance whatsoever to any form of banner-stone.

The other type of European holed axes is those frequently referred to as ceremonial axes. These are generally small and quite slender. Undoubtedly it was this type of axe that Dr. Holmes believed the Indians had copied. One of these objects is illustrated in Plate 36, page 118.

After comparing the European ceremonial axes to the various designs of banner-stones, it was discovered that there exists no real evidence of relationship of lines and planes.

The only group of banner-stones that have lines and planes somewhat similar to this type of axe are those of the *Knobbed Lunate Group*. Yet there is a marked difference between the construction of the two types of specimens. The ends of the ceremonial axes are formed into small slightly flared edged blades, while the *Knobbed Lunate* ultimate designs of banner-stones have pronounced knobs. See page 485.

There is another reason why one may oppose Dr. Holmes' theory.

PLATE 36. Ceremonial double-bitted European holed axe found in Denmark. This specimen is made of fine grained gray granite, and is covered with a rusty color coat of patina caused from age. Length 5 1/4 inches.
Plate 5/6 actual size. FROM THE AUTHOR'S COLLECTION

The *Knobbed Lunate* banner-stones occur most commonly in the banded-slate or Heart Area, located far from the New England Area. But few of these ultimate patterns have been found within this region. Furthermore, these specimens do not occur near the New England coast. Those that are found in this particular area were probably carried there by Indians who came from the Heart Area. If any of these patterns were made within the New England states, they were made after the design had developed and the making of these objects had spread that far eastward.

If a European axe had fallen into the hands of the Indians hundreds of years ago, as Dr. Holmes suggests, one would surmise that the occurrence of this axe would have been along the coast rather than in the interior.

The most common design of banner-stones found within the New England Area are the bipennate *Crescent* patterns. These are particularly numerous along the coast. It is interesting to know that the origin of the *Crescent* banner-stones began in the Southern Primary Area. Yet the greater part of the development of this group occurred within the New England Area. A large number of blending forms that form a sequence that lead up to the ultimate designs are found in this area. See pages 459, 467.

If Dr. Holmes had observed more thoroughly the simpler forms of banner-stones found within the New England states and had he noted

how these objects were modified in shape, he probably would have discovered that the highly developed designs were brought about only through evolution. Furthermore, the bipennate *Crescent* banner-stones are the patterns that he undoubtedly regarded as being the copies of a European axe, yet there is no resemblance between either of these two different types of specimens.

WHALE TAIL THEORY

The whale tail theory is another idea advanced early which can be disregarded at this time. Dr. George B. Gordon believed that the *Crescent* shaped banner-stones found in the New England Area were whale tail effigies. Just why such a theory was formed one cannot say, unless it is due to the fact that he had observed a resemblance between the shapes of these stones and the whale's tail. It must be admitted, however, that such a resemblance exists to a certain extent. Nevertheless, this idea seems absurd. As a matter of fact *Crescent* shaped patterns also occur throughout the Middle Mississippi Valley Area. Those found far from the seaboard cannot be associated to the tail of the whale regardless of the fact that some resemblance of outline exists. To consider these patterns as being symbols which were made to represent the moon would seem more reasonable. This statement, however, should not be regarded seriously or as a theory.

There seems to be but one logical source of origin which can be associated with the *Crescent* banner-stones. This theory is easily explained. The *Crescent* patterns found in the New England Area and those found far into the interior developed through evolution from a simple boat-shaped primary form. This primary form has no resemblance whatsoever to a whale's tail.

It is also interesting to know that the ultimate *Crescent* patterns from these two widely separated areas developed independently of each other. The reason why one may believe that there were two separate developments is that the ultimate *Crescent* patterns of these two separated areas differ from one another. Those from the New England Area are notched and generally made of slate. Those from the Middle Mississippi Valley Area are unnotched and generally made of various granites.

FORMING A COMPLETE CLASSIFICATION

Many years ago Dr. Warren K. Moorehead created the following terminology, pennate, bipennate, lunate, geniculate, and ovate for classifying certain shapes of banner-stones. It has been a very difficult problem for the writer to devise a scheme to classify all of the modified designs of banner-stones and still retain Dr. Moorehead's classification which has stood for so many years. This more complete classification has been accomplished. Many years were devoted to this task before a practical and simple scheme for a complete classification of these stones was created.

Before the meeting of the Illinois State Academy of Science* held in Quincy, Illinois, on May 1, 1935, the writer advanced for the first time the classification scheme which he has adopted. By this arrangement the specimens that form a sequence, and which constitute the evolution up to those most highly developed, are classified as *blending forms*. The highly developed ultimate designs are classified as *types*. Previously these two terms have been applied to all patterns of banner-stones in general.

Following this chapter is a series of charts which illustrate the evolution of the different groups of banner-stones, and also the system by which they are classified. By this arrangement all of the modified designs can be identified by name and also by a number.

PERFORATED PEBBLE FORMS

These interesting specimens are nothing more than natural water worn pebbles through which a perforation was drilled. The great majority of these objects are oval in shape and quite small. Many of those observed show that no attempt was made to alter the original shape of the water worn stone. Others occasionally show that only a slight amount of work was done on the outer surface of the pebbles, but this work was only done for the purpose of truing the shapes of pebbles that were not symmetrically balanced. It may seem possible that some of these simple forms were used as fishing-line sinkers, because a rather large number of grooved pebbles occur throughout the Southern Area, which were

*Knoblock, Byron W.: *Evolution of Banner-Stones*. Springfield, Illinois. Illinois State Academy of Science Transaction, Vol. 29, No. 2, 1936.

undoubtedly used for that purpose. It seems that the grooved pebbles should be classified as fish sinkers but the perforated pebble forms should not be included in such a classification.

The main reason why the perforated pebbles could not have been fishing line sinkers is that so much work was required to make them. To groove a pebble was a much easier task than to make a perforation. Only a shallow groove was necessary to allow a pebble to be held fast to a fishing line. There is a similar question concerning possible uses, connected to the beautifully made hematite plummets which occur throughout the Mississippi Valley. Many believe these objects were also fish-line sinkers. But, if one realizes the efforts that were made to secure this material from far distances and the time required to make them, their ideas would probably change. Many of these plummets show superb workmanship. Occasionally snakes, lizards, turtles, and other creatures were carved in relief upon these objects made of this extremely hard material.

In the chapter *Uses of Banner-Stones* a theory is advanced which mentions that the early made perforated pebble forms from the Primary Area were probably of an ornamental origin. It is difficult to say whether or not these objects were worn as ornaments or were used as symbols being placed on the ends of staffs. It matters little if these stones are even classified as banner-stones. They still are of great importance. Because of the fact that they are perforated in the same manner as the banner-stones, they should be so classified. A number of perforated pebble forms from the Primary Area, and also a few from the Eastern Coast Area, are illustrated in Plate 37.

The writer firmly believes that the perforated pebble forms from the Primary Area are the origin of all banner-stones. These simple patterns also occur along the eastern coast as far north as New Jersey. From observation it has been discovered that the specimens from the Eastern Coast Area and the New England Area had played no part whatever toward the evolutionary development of all patterns. It is very possible that many of the perforated pebble forms that are found along the eastern coast were carried there from the Southern Primary Area. If, however, any of the pebble forms from the Eastern Coast and those from the New England Areas had played a part in the development of banner-stones, it was only upon those found within these areas.

EXPLANATION OF PLATE 37

PERFORATED PEBBLE FORMS

The simplest of all patterns of various materials from the Primary and Eastern Coast Areas

Plate 1/2 actual size

No. 1—MERCER COUNTY, NEW JERSEY. Material, sandstone. 1 3/4 inches wide.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 2—NORTH CAROLINA. Material, gray steatite.
E. K. Petrie collection, Burlington, Wisconsin

No. 3—ALABAMA, County unknown. Material, light banded-slate.
E. W. Payne collection, Springfield, Illinois

No. 4—MERCER COUNTY, NEW JERSEY. Material, argylite. Incompleted drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 5—MACON COUNTY, NORTH CAROLINA. Material, gray slate.
Sam M. Cathcart collection Anderson, South Carolina

No. 6—UNION COUNTY, NEW JERSEY. Material, sandstone. Drilling 1/4 inch deep.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 7—MACON COUNTY, NORTH CAROLINA. Material, gray steatite. Large hole drilled from each end. *Sam M. Cathcart collection, Anderson, South Carolina*

No. 8—BURLINGTON COUNTY, NEW JERSEY. Material, sandstone.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 9—NEW JERSEY, County unknown. Negative No. 27662.
Peabody Museum of Harvard University collection, Cambridge, Mass.

No. 10—NEW JERSEY, County unknown. Negative No. 25607.
Peabody Museum of Harvard University collection, Cambridge, Mass.

No. 11—NEW JERSEY, County unknown. Negative No. 6/6922.
Museum of the American Indian, Heye Foundation, New York, N. Y.

No. 12—OCONEE COUNTY, SOUTH CAROLINA. Material, green steatite.
Sam M. Cathcart collection, Anderson, South Carolina

No. 13—GEORGIA, County unknown. Material, tan steatite. *From the author's collection*

No. 14—ABBEVILLE COUNTY, South Carolina. Material, dark steatite.
Sam M. Cathcart collection, Anderson, South Carolina

No. 15—LAMAR COUNTY, ALABAMA Material, brown limonite.
E. K. Petrie collection, Burlington, Wisconsin

No. 16—GEORGIA. Material, gray steatite. Found near the Kyle Mound.
E. K. Petrie collection, Burlington, Wisconsin

No. 17—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 18—NEW JERSEY, County unknown. Negative No 38886.
Peabody Museum of Harvard University collection, Cambridge, Mass.

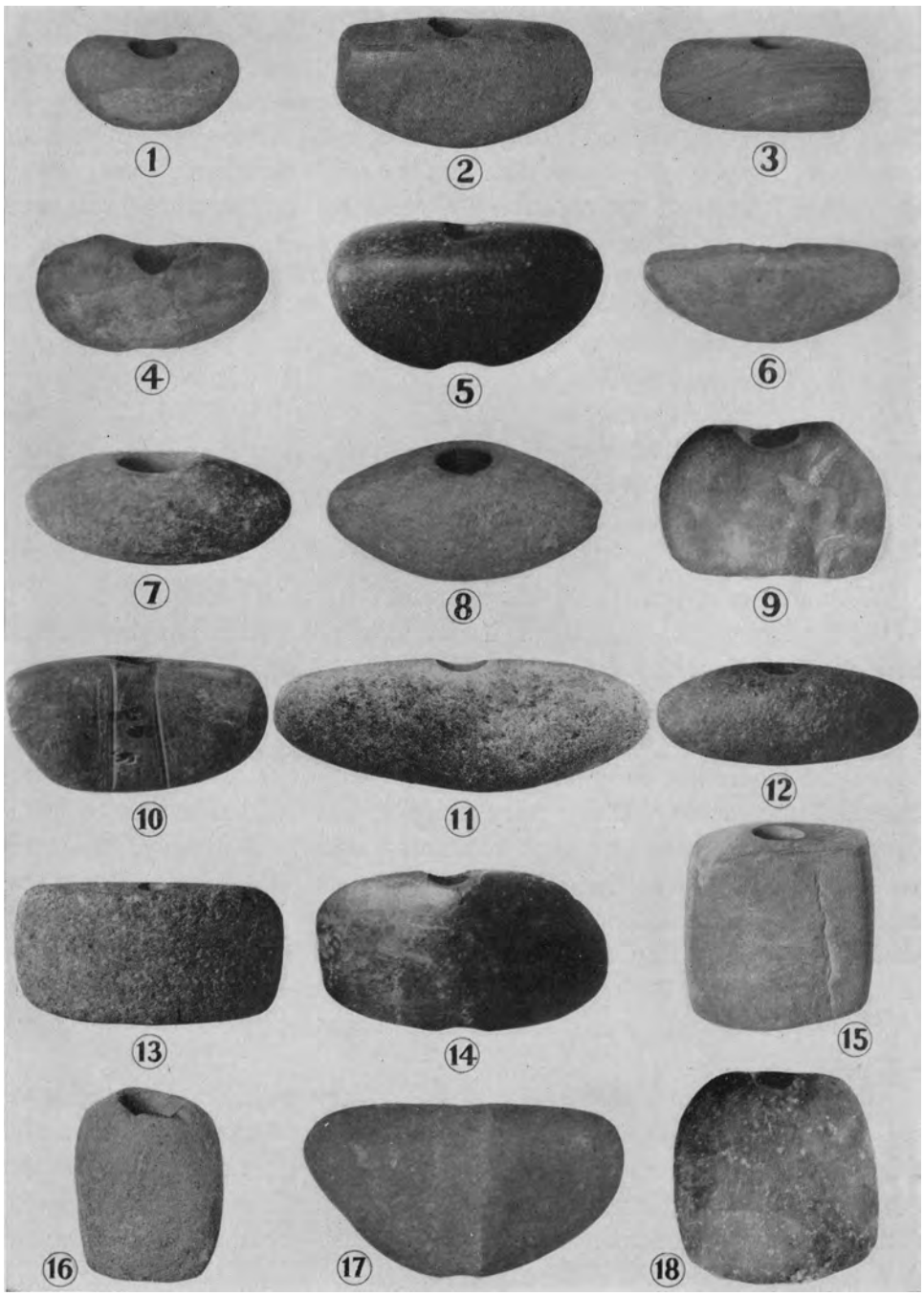


PLATE 37

THE DEVELOPMENT OF THE PRIMARY FORMS

As the custom of making the perforated pebble forms became more popular in the Primary Area, the Indians were no longer content with these uninteresting shapes. They endeavored to work the pebbles into more attractive shapes. It was then that the seven *Southern* primary forms developed. A list of these patterns is given by their adopted name and also by their number, as follows:

SOUTHERN HUMPED ..... No. 1
SOUTHERN TRIANGULAR ..... No. 2
SOUTHERN DOUBLE-EDGED ..... No. 3
SOUTHERN OVATE ..... No. 4
SOUTHERN RECTANGULAR ..... No. 5
SOUTHERN BOAT-SHAPED ..... No. 6
SOUTHERN TUBULAR ..... No. 8

The area in which the *Southern* primary forms are found is classified as the Primary Area. This area is indicated on the map of North America in Plate 1. It includes the northern part of Alabama, Georgia, and the greater part of South Carolina. The charting of this area was not brought about through mere guess work. It was established by thorough research. After the differently designed and simplest shapes of banner-stones were classified as comprising the primary forms, it was decided to map the area in which these specimens most commonly occur. Naturally, this area would indicate where these patterns originated and where they were made. The exact location where each primary form was discovered, which was observed by the writer was indicated by a mark on a map of the United States. After all of these observed specimens were indicated on the map, a line was drawn around the indicated marks, thus establishing a Primary Area.

It has been found that *Ovate* primary forms occur in two different widely separated areas, and are responsible for the development of entirely different groups of banner-stones. The *Southern Ovate Primary Form No. 4* is responsible for the development of the three beautifully designed ultimate patterns which are classified under the type numbers as follows: Nos. 15, 16, 17. See Plate 43, page 149.

The other *Ovate* primary form is found within the banded-slate or Heart Area. This pattern is classified as follows:

HEART AREA OVATE.....No. 7

From this primary form three different groups of banner-stones developed. Each of these groups developed two ultimate designs or types.

By referring to the chart illustrating the *Banner-stone Tree of Evolution*, one can observe these types, listed under the type numbers as follows: Nos. 23-24-25-26-27-28. See Plate 43, page 149.

THE DIVIDING OF BANNER-STONES INTO GROUPS

After a thorough study of the great number of modified designs of banner-stones, the writer has come to the conclusion that there exists but twenty-four groups. Specimens from each of these groups can be classified individually by certain characteristics which they possess. Many of these observed may appear to be independent in themselves but are not, and only belong to some particular group in which they are but blending forms helping to establish the evolution of some type.

If one were to assemble several hundred banner-stones which were gathered from all sections of the Banner-stone Area, putting them in one pile, and then proceeding to sort them into separate groups by selecting the specimens which show a resemblance of lines and planes, one would find that twenty-four separate groups would be assembled. In the final analysis one would also find that there exists a relationship of one banner-stone to another, thus establishing the evolution of types. The writer contends that the twenty-four groups will stand as a permanent number. There are a number of groups, however, that developed more than one ultimate design or type. Upon selecting the ultimate patterns, one would also find that the twenty-four groups developed thirty-two distinct type specimens. If further research should uncover other types that are authentic, they should be added to this list. The writer has arranged a table of the twenty-four groups. This table also shows the groups that developed more than one type. Each of the types can be identified by name and also by number as follows:

TABLE OF THE 24 GROUPS AND THE 32 TYPES, LISTING THE TYPES WHICH COMPRISE EACH GROUP

GROUPS		TYPES
No. 1—Humped		No. 1
" 2—Concave Humped		" 2
" 3—Shield-shape		" 3
" 4—Triangular		" 4
" 5—Triangular (dual-type)		" 5
" 6—Hour-glass		" 6
" 7—Saddle-face		" 7
" 8—Single-face Bottle		" 8
" 9—Hinge-type		" 9
" 10—Reel		" 10
" 11—Double Bitted Axe		" 11
" 12—Shuttle		" 12
" 13—Geniculate		" 13
" 14—Paneled		" 14
" 15—Notched Ovate	Notched Ovate (Lower Alleghany)	" 15
	Notched Ovate (Heart Area)	" 27
	Double Crescent	" 28
" 16—Quartz Butterfly		" 16
" 17—Rectangular Barreled		" 11
" 18—Wisconsin Winged	Wisconsin Winged	" 18
	Undrilled Wisconsin Winged (fetish)	" 19
" 19—Crescent	Notched Crescent	" 20
	Mississippi Valley Crescent	" 21
" 20—Knobbed Lunate		" 22
" 21—Curved Pick	Curved Pick	" 23
	Single Pronged Pick	" 24
" 22—Notched Butterfly	Double Notched Butterfly	" 25
	Undrilled Notched Butterfly	" 26
" 23—Bi-face Bottle		" 29
" 24—Tubular	Fluted Ball	" 30
	Round and Oval	" 31
	Square, Triangular and Single-face	" 32

CLASSIFYING THE PLANES OF BANNER-STONES

The relationship of one banner-stone to another can be formed only by analyzing the lines and planes of the modified designs and noting the similarity of construction. Yet it seems that a definite arrangement for describing the different surfaces or planes of these objects, is lacking. The different planes are frequently referred to as front, back, sides, ends, top, bottom, and any other names which one cares to apply. The present system is not accurate, and a definite method for classifying these planes should be established. The writer wishes at this time to take the liberty to clarify this situation by introducing a simple system.

From the constructional angle there are but two groups of banner-stones, the *bi-face* group, and the *single-face* group. Approximately two-thirds of these objects are of *bi-face* construction and the remaining one-third are of *single-face* construction.

The winged or bipennate patterns comprise the *bi-face* group. The wings of these specimens extending from each side of the perforation are the same in outline, and the end views are likewise conventional in design. Therefore, because both sides of these patterns are of the same construction in having lines and planes of symmetrical balance, they are double-faced. Instead of using the term double-face, the term *bi-face* has been adopted because it seems to be a more appropriate name.

The *single-face* group are those that are not of symmetrical balance. The lines and planes of these patterns are constructed in such a manner that one side differs entirely from that of the other. For example: we will analyze the construction of an *Hour-glass* banner-stone. See page 283.

One side of these patterns is a flattened or slightly convex plane, while the other side is shaped to a ridge that runs parallel with the perforation, thus giving this side of the stone two planes; the end views are rather elongated triangular shapes. The flattened or slightly convex plane is classified as the *back*. The ridged side with the two planes is classified as the *face*. Because of the fact that these objects have but one face, they belong to the *single-face* group.

It is my opinion that the so-called "Saddle-back" patterns were wrongly named many years ago before any system for analyzing or naming of the planes was taken into consideration. According to this system of classi-

fying the planes of these objects, the flat plane of these particular patterns is the *back*, and the ridged and knobbed surface which is regarded as the saddle-surface, is the *face*. Therefore, these objects should no longer be called "Saddle-back," but should from now on be classified as *Saddle-face* specimens. See page 293.

This simple arrangement not only establishes a definite means by which one can identify the different planes of banner-stones; it also automatically creates the much needed means by which to classify those that are varied in construction. The writer is now referring to certain patterns that are noted in both the *single-face* and *bi-face* groups which are modified in shape to the extent that they are no longer of regulation design of the groups to which they belong.

For example: the winged or bipennate banner-stones comprise the *bi-face* group. Occasionally specimens are also noted that vary in construction in such a manner that the two sides do not correspond. Such variations are then taken from the *bi-face* group and placed into the *single-face* group. Plate 38 shows two views of a small *Curved Pick* blending form from Allegan County, Michigan. One side of this object is smooth, the other side has a pronounced notched ridge running parallel with the perforation. Because of this variation, this particular specimen is placed into the single-face group regardless of the fact that these patterns generally belong to the *bi-face* group. The *Curved Pick*, *Double Crescent*, and possibly other designs which belong to the *bi-face* group occasionally furnish specimens that show similar variations of construction, thus making it necessary to classify them to the *single-face* group.

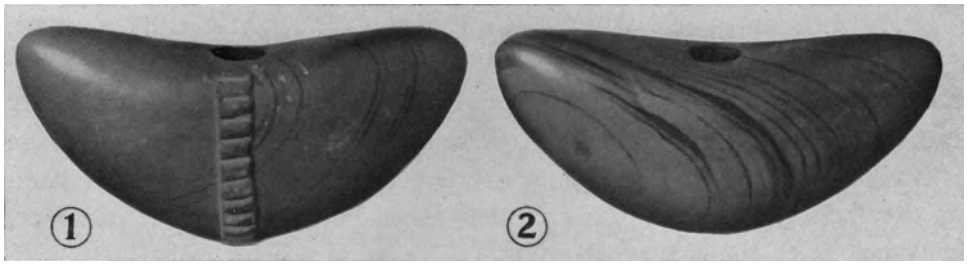


PLATE 38.—A small single-face Pick blending form. Note the one view No. 1 shows a raised and notched ridge. This side is the face. No. 2 shows a smooth surface which is the back. This specimen was found in Eaton County, Michigan. Material, banded-slate. Plate 2/3 actual size. FROM COLLECTION OF DONALD O. BOUDEMAN, KALAMAZOO, MICH.

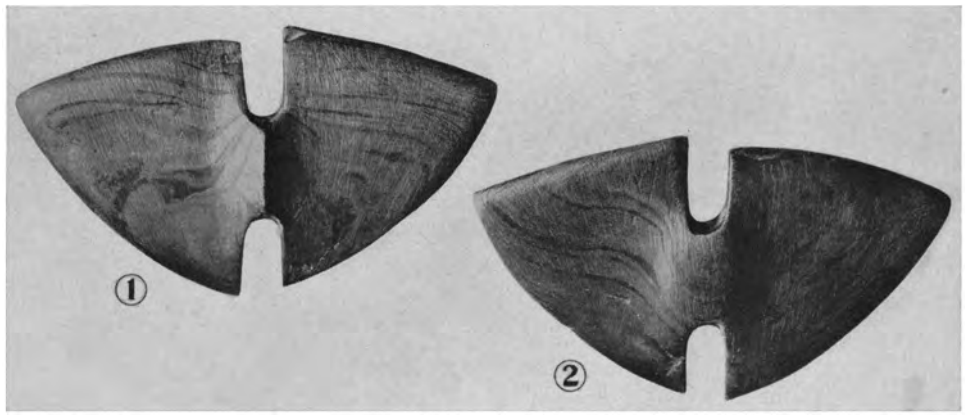


PLATE 39.

This Double Notched Butterfly banner-stone is very interesting because it is of single-face construction. It is the only type specimen of its kind observed by the author showing this unusual variation in design. It was found in Montgomery County, New York, and is made of green banded-slate.

Number 1 shows the face which has a very pronounced ridge.

Number 2 shows the back which has only a slightly raised area through the middle of the stone to allow sufficient material for the perforation.

Plate 1/2 actual size. FROM THE AUTHOR'S COLLECTION

Many of the *Hour-glass* banner-stones encountered are designed in such a manner that both sides are of the same construction. Generally the specimens that show this variation will have corresponding convex planes similar to that of the back, without any ridge. The end view of these objects is canoe-shaped. Variations with two ridged faces give the patterns a rather elongated diamond-shape from an end view. These, however, are far more rare than those without any ridge.

These modified designs were probably made by individuals to suit their particular fancy and are quite rare. Because these objects are nothing more than *Hour-glass* variations, there is no reason why they should be put into an independent type group. Furthermore, the *bi-face* and *single-face Hour-glass* patterns developed from the same primary form. This complex situation is illustrated by two *Hour-glass* variations in Plate 40. The one shown on the left is a *single-face* pattern, and the one shown on the right is a *bi-face* pattern which has no ridge on either side.

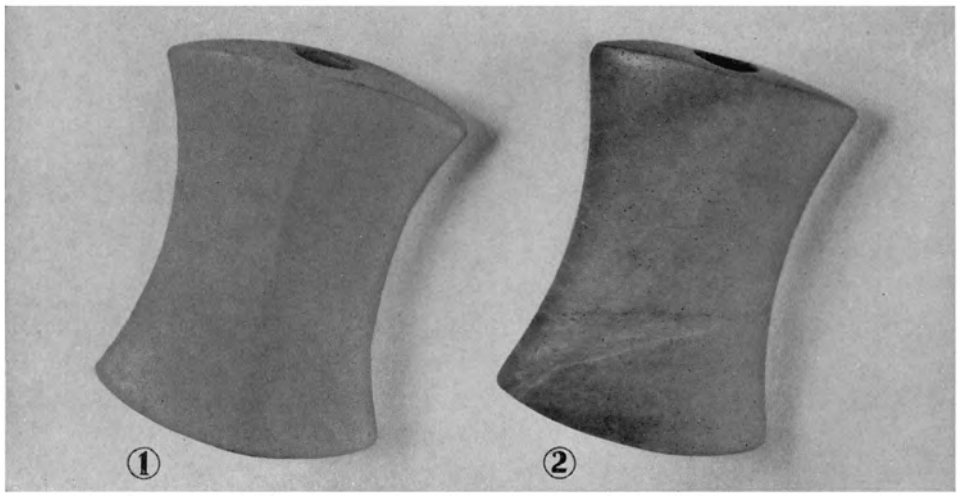


PLATE 40.

These two Hour-glass banner-stones are illustrated to show variations of construction. The one on the left is a true single-face pattern. The surface displayed is the *face*, and the *back* is a single slightly convex plane. The one on the right is a *bi-face* pattern. Both sides of this specimen are of the same construction, having corresponding planes similar to that of the back, without any ridge on either side.

Although these two specimens are of highly developed lines, they can not be classified as types because neither are made of ferruginous quartz. Both were probably made prior to the time when ferruginous quartz was adopted to add to the ceremonial significance of these patterns. Class B specimens.

No. 1. Franklin County, Kentucky. Material, white translucent quartz. Found near the town of Frankfort. Catalogue number 9. FROM THE AUTHOR'S COLLECTION

No. 2. Gasconade County, Missouri. Material, tan opaque quartz. Found near the town of Herman in 1927. Catalogue number 7.

Plate 2/3 actual size. FROM THE AUTHOR'S COLLECTION

The surfaces or planes of all banner-stones where the perforation has been drilled through can be referred to as the *ends*. It may seem strange to apply this term to *Geniculate* patterns. Yet, if this term can be so accurately applied to all of the other designs, there is no reason why it should not be applied to the *Geniculate* patterns, regardless of the protruding prong. This method for naming the planes of these objects leads to a better understanding of the evolution of the designs of the many classified types. See Plate 162, page 347.

THE A, B, C SYSTEM

Probably the most important feature of the classification system adopted by the writer for classifying banner-stones is the *A, B, C system.* By the use of this simple system the primary forms, blending forms, and types can be classified accurately by a designated term. It also establishes a means to identify the position they hold in the so-called *Banner-stone Tree of Evolution.* Following this chapter is a series of charts that show the evolution of design of each group of patterns. These charts also illustrate the use of the *A, B, C system.*

It is reasonably easy for one to assume that hundreds of years, and possibly thousands of years, were required before the entire eastern half of the United States became inhabited. It is interesting to discover that these objects are well distributed over this enormous territory. Therefore, it is no wonder why there exists so many different groups which are comprised of so many modified designs. Furthermore, because the differently designed patterns are found within different areas, one is able to study the evolution of the design of each group separately, and more easily, even though the entire complex situation seems complicated.

Generally the variations of the designs of the specimens of the many groups when compared to one another are very slight. One can start with a single primary form and can arrange a dozen or more modified patterns into a sequence before the type specimen of a single group is reached. Previously there was no way for one to classify these variations which form this evolution. To clarify this situation it may seem off-hand to be a difficult task, but it was discovered that the problem could be rectified in a very simple manner by using the *A, B, C system.* A description of this system is given as follows:

Class A specimens include the eight Primary Forms.

Class B specimens include the Blending Forms.

Class C specimens include the ultimate designs or Types.

Plate 41 illustrates four differently designed patterns that are arranged in a sequence to show the evolutionary development of the design of the *Notched Butterfly Group.* These objects are classified by the *A, B, C system.*

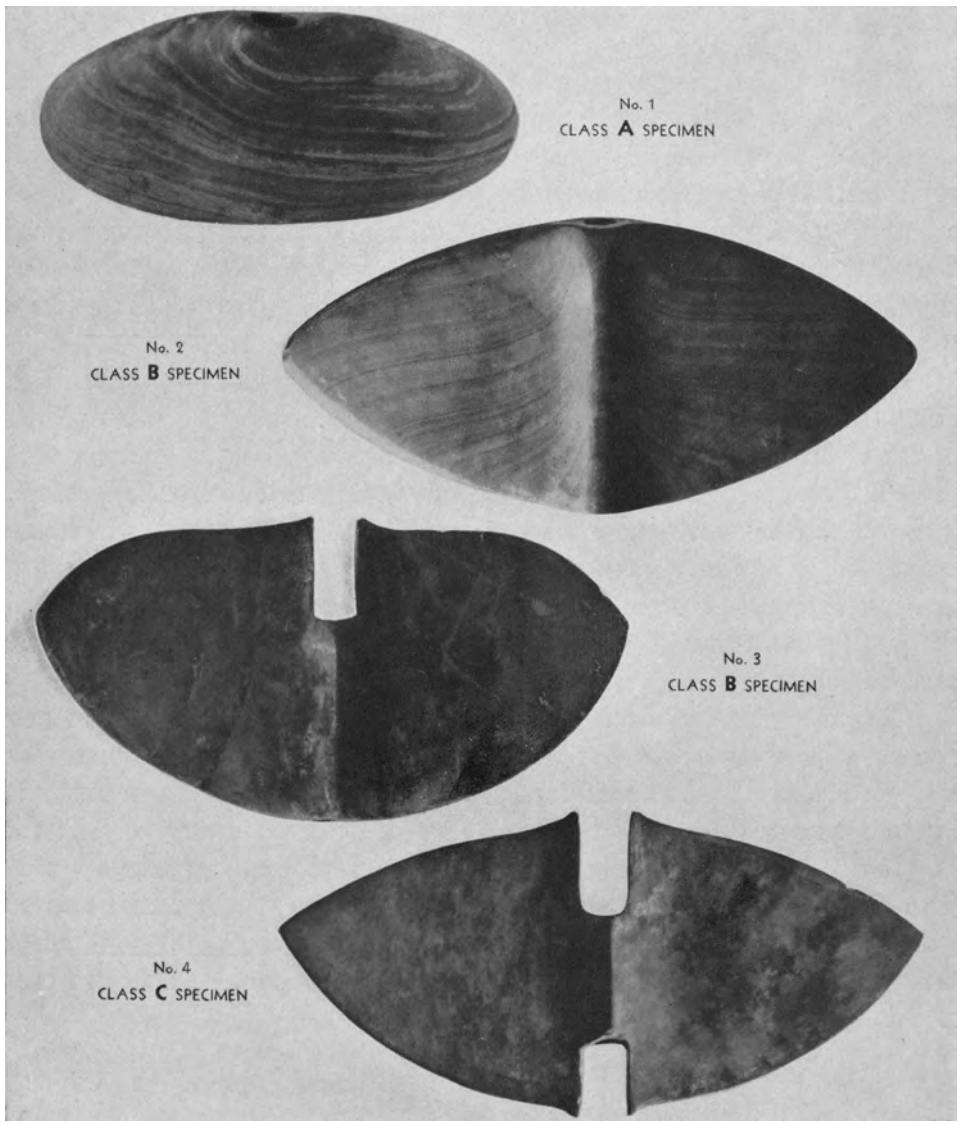


PLATE 41. This plate illustrates the use of the A, B, C system.
No. 1—Primary form No. 7, from Allen County, Ohio. Material banded-slate.
FROM THE AUTHOR'S COLLECTION
No. 2 Unnotched blending form, from Franklin County, Ohio. Material, banded-slate.
No. 3—Single notched blending form, from Hardin County, Ohio. Material, banded-slate.
No. 4—Double notched type, from Huron County, Ohio. Material, banded-slate.
Plate 1/2 actual size. Notched Butterfly Group. Nos. 2-3-4 from the
OHIO STATE ARCHAEOLOGICAL AND HISTORICAL SOCIETY COLLECTION, COLUMBUS, OHIO.

Class A specimens of this group are the *Heart Area Ovate Primary Forms No. 7*. These simple patterns are oval in shape, and the wings are generally quite thick. The majority of them were made from water worn, or glacial pebbles of banded-slate.

Class B specimens are those that were later developed from the primary forms. The unnotched patterns generally have delicately formed thin wings. Following these are the single-notched patterns which also come under this classification.

Class C specimens are those that reached the highest stage of development by having two notches. These ultimate designs are the so-called types.

ESTABLISHING TRAVEL ROUTES BY FOLLOWING THE EVOLUTION OF BANNER-STONES

Probably the most interesting information that can be obtained from the study of the evolution of designs of banner-stones is the establishment of travel routes. It is very evident that the earliest specimens were made by people who lived in the Primary Area. This area includes a large part of Alabama, Georgia, and South Carolina, which is indicated on a map of North America in Plate 2.

Apparently the people who occupied this part of the Southern Area belonged to different clans and tribes. It is very evident that these people traveled in different directions from this common center and had taken along with them the art of making banner-stones which consisted only of the simple primary forms.

Some of these people traveled westward to the lower Mississippi Valley, and then worked their way northward up this river entering the lower Ohio River Valley. Other individuals from the Primary Area traveled northward through Tennessee and Kentucky entering the Middle Ohio River Valley. There were still others from this area who traveled northeastward following a course along the eastern side of the Alleghany mountains to the New England Area.

When these people from this common center began to invade new territory it seems that certain primary forms were taken in one direction, and others were taken in some other direction. There were also certain

primary forms that were taken in more than one direction. Probably, at that early time these simple forms symbolized different clans and tribes. This accounts for the fact that certain ultimate designs are found in different sections of the Banner-stone Area. The patterns that are found in the New England Area differ from those found in the Ohio River Valley, and those found in the Ohio River Valley are different from those found in the Mississippi River Valley.

As these people traveled in many directions from the Primary Area a trail of scattered specimens were left in the territories that they had occupied. During the course of these travels the simply designed patterns became more and more improved until they were elaborately designed. These scattered specimens not only establish a means by which one can trace the origin and evolution of these objects, but also establish fairly well the routes of travel that these ancient people had taken from a common center.

The evolution of design of the ultimate *Crescent* patterns furnishes a splendid means to illustrate how travel routes can be established. The origin of this type group began in the Primary Area. It is evident that this primary form was taken from this area in two directions. Some of the people of this common center carried the original pattern to the New England Area, where the design developed into the highly specialized *Notched Crescent Type No. 20.* Other individuals had taken the same primary form westward into the Lower Mississippi Valley Area. During the course of their travels the design also became more highly developed in shape. The people of the Lower Mississippi Valley Area later traveled northward up this river entering the Lower Ohio Valley Area. By the time these people had occupied the Middle Mississippi and Lower Ohio Valley Areas, the design became highly developed. These ultimate designs are classified as the *Mississippi Valley Crescent, Type No. 21.* Therefore, ultimate *Crescent* patterns were developed in two areas from a single primary form. It is for this reason that the writer has divided the *Crescent* banner-stones of these two widely separated areas into two type groups. See Plate 52, page 155.

By tracing the evolution of each group of these objects by the trail of modified patterns, one can discover the different travel routes that were taken from the Primary Area.

ESTIMATE NUMBER OF BANNER-STONES IN NORTH AMERICA

It may seem absurd to attempt to estimate the number of banner-stones that were made by the prehistoric Indians of North America. Because these objects occur throughout the eastern half of the United States and a small part of southeast Canada, one might surmise that they are very numerous. After we compare the number of those encountered to the enormous territory in which they occur, one discovers they are quite rare.

It is utterly impossible at this time to state accurately the number of specimens that have been discovered or estimate the number undiscovered. Yet the writer believes that he can give estimated figures that will be fairly accurate ones. He has come in contact with no less than three thousand specimens. This figure is not exaggerated or arrived at by guess work. It is established by tabulation of those that he has actually handled, observed, and studied in museums and private collections. It must be remembered that these observations were made mainly throughout the Type Area in which these objects are most abundantly distributed.

Next, an attempt will be made to tabulate the number of specimens that are in the large eastern museums, colleges, and university collections that are scattered throughout the country which he has not visited. Through correspondence, however, and by receiving photographs from many of these institutions much information was obtained. It has been discovered that the number of specimens in these collections is comparatively small, their total will probably not exceed one thousand.

One must also consider that there are small collections scattered throughout the country, and many of these often contain banner-stones. Many of these objects are also still in the hands of farmers and other individuals who do not attempt to make collections. It is impossible to tabulate these. The writer believes, however, that an estimated figure of over one thousand would be an exaggerated one. The above mentioned figures show a total of five thousand so far discovered.

Next, an attempt will be made to estimate the number of specimens that have not been discovered. Many of these objects never will be found. It seems almost ridiculous for one to attempt to estimate the number of those undiscovered, and whatever the estimated figure may be can be regarded only as a guess. Nevertheless, one may believe that a

large part of the number that were made have been discovered. Let us surmise that there are five thousand specimens not discovered. Such a guess is probably a fair one. This figure also includes those unfinished. After we total the estimate number of those so far discovered, and the estimated number of those undiscovered we have a grand total of ten thousand. During the forming of this estimation it was my desire not to quote exaggerated figures.

The Banner-stone Area that the writer has charted on Plate No. 2 is considerably larger than ever charted before. At this time this area is quite accurate. This territory is so large that it would probably be interesting to discover how many square miles it contains. It would also be interesting to know how many square miles each specimen would occupy if they were evenly distributed over this enormous territory. Such a tabulation can be made, by dividing the total number of square miles of the Banner-stone Area by the estimated number of specimens.

A great percentage of the Banner-stone Area is comprised of rivers and lakes. Perhaps the area of square miles of water should be included in this table. This suggestion is due to the fact that many of these objects, as well as others, were lost in rivers and lakes.

It may be interesting to know that there are three specimens illustrated in this volume which were discovered while dredging in rivers. These are shown in Plate 7, 203, and 263. Years ago the writer observed a beautifully spotted granite winged banner-stone that was taken from the Arkansas River in a most unusual manner. It was brought up from the bed of the river after being caught on a clam hook. One of the bent nails which was fastened on one of the lines happened to become inserted into the perforation, and when the clam fisherman lifted his series of lines he found it hanging. It is with regret that the writer was unable to secure a photograph of this unusual find and could not illustrate it. A good reason to include the waterways in this table is that these objects are frequently taken from river beds.

We shall use, however, for this table only the square miles of the Banner-stone Area of the United States and will not include the small part of southeastern Canada. Only a small part of the state of Minnesota, Nebraska, Kansas, Oklahoma, and Texas is included in this table. The square miles of land and waterways is given in this table as follows:

TABLE SHOWING THE SQUARE MILES OF THE BANNER-STONE AREA

STATE	LAND AND WATER
Alabama	51,998 square miles
Arkansas	53,335 " "
Connecticut	4,965 " "
District of Columbia	70 " "
Florida	58,666 " "
Georgia	59,265 " "
Illinois	56,665 " "
Indiana	36,354 " "
Iowa	56,147 " "
Kentucky	40,589 " "
Louisiana	48,506 " "
Maine	33,040 " "
Maryland	12,327 " "
Massachusetts	8,266 " "
Michigan	57,980 " "
Minnesota	28,327 " "
Mississippi	46,865 " "
Missouri	69,429 " "
New Hampshire	9,341 " "
New Jersey	8,224 " "
New York	49,204 " "
North Carolina	52,426 " "
Nebraska	1,544 " "
Oklahoma	14,011 " "
Kansas	16,432 " "
Ohio	41,040 " "
Pennsylvania	45,126 " "
Rhode Island	1,248 " "
South Carolina	30,989 " "
Texas	2,659 " "
Tennessee	42,022 " "
Vermont	9,564 " "
Virginia	42,627 " "
West Virginia	24,170 " "
Wisconsin	56,066 " "
Total	1,169,487 square miles

By dividing the total number of square miles of the Banner-stone Area, (1,169,487) tabulated in the above table by the estimated number of banner-stones, (10,000), we find that there are 116.94 9/10 square miles of area to each specimen.

PROSPECTIVE TABULATION

From observations it has been discovered that the banner-stones consist mainly of blending forms. A large percentage of the specimens examined is unfinished. Those unfinished include the modified patterns from the lowest to the highest plane. The percentage number of finished ultimate designs or types are considerably smaller than that of the blending forms.

If it were possible at this time to obtain a complete tabulation of the specimens so far discovered, the result would be a step toward a better knowledge of these objects. Such a tabulation would establish the percentage number of those unfinished, primary forms, blending forms, and types. It would be necessary to classify carefully each specimen and tabulate the county and state where they were discovered. The material of each pattern could also be tabulated. To form such a tabulation would be a tremendous task, because the large collections are so scattered. Perhaps some day this task will be done. A tabulation of this nature seems quite unlikely. But if it were done one would then be able to indicate on maps of the United States the distribution of each group of these stones accurately. Furthermore, the different modified patterns could be classified by the *A*, *B*, *C system* and indicated on these maps by differently colored pins.

For example: one could indicate on a map with red pins the location in which the primary forms of a single group are found. The blending forms of the same group could be indicated with white pins. Perhaps it would be better to represent the blending forms with pins of two colors, white and pale blue. The pale blue pins could represent the specimens that are of construction similar to the ultimate designs but made of various materials which were used prior to those made later of special adopted materials. The type specimens could be indicated by dark blue pins. This color would include those that were made of adopted materials. Other colored pins could also be used to represent those unfinished.

After such a map was completed for a single group it would then be easy to study the evolution of design, distribution, travel routes, and the adoption of a special material for ultimate design. One could also

note by their construction the specimens that were carried far from their original area and also by the materials from which they are made.

The area that would have the greatest number of red pins representing the primary forms would indicate the section of the country where these patterns were made. The area in which the white pins were placed would identify the area in which the blending forms most commonly occur, and the section of the country to which the Indians had traveled from the common center. The area in which the light blue pins were placed would indicate the section of the country in which the design reached a high development of construction. The dark blue pins would indicate the area in which the ultimate designs or types occur, including those that were made of adopted materials. It is certain that an accurate account of these stones could be made with the aid of such a comprehensive tabulation of each group.

It seems that at this time the banner-stones which are available to study and so tabulate furnish one with sufficient material to reach a rather definite knowledge concerning their distribution, development, adoption of special materials for particular types, and other interesting facts. The writer has prepared a table of specimens consisting mainly of those which he has examined and others that were classified from pictures that he has received. These have been carefully classified and tabulated to show the number of those unfinished, blending forms, types, and freaks, for the purpose of establishing a percentage chart.

The so-called *Percentage Chart* about to be offered represents three thousand and six hundred banner-stones. According to the estimated number of five thousand specimens so far discovered in the United States, the percentages shown in this chart should be quite accurate. If it were possible for the writer to have tabulated an even larger number, there is no doubt that the percentages shown in this chart would not be changed to any great extent.

This chart is also very interesting because it lists the names of museums and collectors and the number of banner-stones in these collections. The number of specimens which are credited to many of the larger eastern museums are not accurate because these figures represent only those from which pictures were made for this volume. Naturally they have a larger number than are tabulated. The percentage chart is as follows:

PERCENTAGE CHART

COLLECTIONS	UNFINISHED	BLENDING FORMS	TYPES	FREAKS	TOTAL
Alabama Museum of Natural History	4	5	—	—	9
Arthur R. Altick	4	4	14	—	22
American Museum of Natural History	3	24	8	—	35
Geo. Bedford	—	1	1	—	2
C. C. Benedict	6	14	8	—	28
Donald O. Boudeman	222	235	183	7	647
Dr. Rollin Bunch	21	26	47	—	94
N. E. Carter	3	13	3	—	19
Sam M. Cathcart	6	8	1	—	15
Sprague W. Chambers	13	66	48	1	128
Con Foster Museum	18	65	34	3	120
C. W. Cooperider	1	1	2	—	4
Wilbur M. Cunningham	3	11	16	—	30
A. C. Dickson	—	—	1	—	1
Thomas J. Dillingham	—	7	2	—	9
Albin A. Elchert	—	1	1	1	3
C. W. Fair	—	1	2	—	3
Field Museum of Natural History	18	33	14	—	65
B. Frank Flory	—	1	1	—	2
W. C. Fuellhart	—	8	1	—	9
G. S. Goessling	—	1	1	—	2
G. I. Groves	1	1	4	—	6
A. D. Grutzmacher	12	59	13	—	84
Charles N. Guy	—	—	1	—	1
Leslie Hill	—	4	7	—	11
F. P. Hills	—	7	19	—	26
Indiana Historical Society	41	186	126	2	355
Indiana State House	3	3	2	—	8
Jefferson Memorial	2	5	1	—	8
Fain White King Mrs. Blanche Busey King	20	63	17	1	101
Byron W. Knoblock	39	66	80	2	187
Harry J. and W. Kendall Lemley	6	13	13	—	32
Logan Museum, Beloit College	8	8	1	—	17
John Maffenbeier	1	3	2	2	8
J. A. Meyer	—	1	—	—	1

COLLECTIONS	UNFINISHED	BLENDING FORMS	TYPES	FREAKS	TOTAL
Dorothy E. Middleton	25	14	5	—	32
Milwaukee Public Museum	—	—	3	—	3
Dr. B. J. Moss	3	2	9	—	14
R. C. Murray	1	2	—	—	3
Museum of the American Indian	4	33	14	1	52
Ben Neusbaum	1	—	6	—	7
Ohio State Archaeological and Historical Society	27	135	108	2	272
E. W. Payne	114	260	118	3	495
Peabody Museum of Harvard University	5	27	5	—	37
Irvin Peithman	4	9	4	—	17
Dr. A. W. Pendergast	5	19	5	—	30
E. K. Petrie	1	2	1	—	4
Joseph J. Quinlan	—	2	1	—	3
T. R. Reichert	—	2	1	—	3
E. L. Renno	4	17	30	5	56
Joseph Ringeisen, Jr.	1	2	8	—	11
Philip C. Schupp	12	69	42	4	127
C. E. Sisk	—	9	4	—	13
Kyle L. Sly	1	3	1	—	5
Smithsonian Institution, United States National Museum	7	36	24	—	67
L. C. Snyder	1	8	13	—	22
Julian C. Spurgeon	—	1	—	—	1
B. W. Stephens	14	47	45	1	106
Claude U. Stone	3	5	3	4	15
Charles S. Street	—	1	—	—	1
J. Sutter	—	1	—	—	1
The State Historical Society of Wisconsin	8	17	13	1	39
Dr. P. F. Titterington	4	14	17	—	35
University of Pennsylvania	—	21	—	—	21
University of Texas	—	2	1	—	3
C. H. Thomas	1	—	—	—	1
	700	1705	1155	40	3600
Percentage	19.45%	47.361%	32.083%	11.111%	

THE DEVELOPMENT OF ULTIMATE DESIGNS OF BANNER-STONES THROUGH BREAKAGE

The so-called evolution of banner-stones is based entirely upon the gradual modifications of designs. It is very probable that these modifications were brought about very slowly. One may be safe in saying that several thousands of years were required to develop many of the ultimate patterns. In view of this fact it is no more than just to also consider the development of certain ultimate designs from other angles other than the general routine of gradual changes. One can, then, discover the reason why and how some of the ultimate designs were created.

The writer believes that many of the designs of type specimens were developed rather suddenly. It is also very probable that many were accidentally created through breakage. Perhaps it may be more appropriate to say that the beginning of the final designing of certain ultimate designs began through breakage of blending forms.

It is evident that the changes of designs that were brought about suddenly are generally radically different from those previously made, thus furnishing a good reason why such a theory can be formed. The only way this theory can be demonstrated is by pointing out these reasons.

For example: we shall use the *Notched Butterfly Group* to demonstrate this theory. It is very probable that the ultimate designs type No. 25 developed from the unnotched forms. The blending forms apparently developed slowly up to a certain stage and then the development of the design stopped rather abruptly. The highest developed patterns of this group up to this stage were the unnotched blending forms. Because the majority of these objects were so delicately made, many were easily damaged. Frequently a small piece of stone was broken away at one end by the staffs that were inserted into their perforations too tightly. It is from these damaged specimens that the theory of developing ultimate designs through breakage has been formed. It is very evident that the Indians frequently would salvage these damaged specimens if not broken too badly. The salvaging was done by carefully sawing and grinding the damaged end into a well formed notch. Thus, a new design was created rather suddenly, the single notched pattern. See page 132.

One may also believe that if a similar damage occurred at the other end of those salvaged in this manner, the newly damaged end was also

reworked into a secondary notch. The result of such a procedure was then the development of the ultimate designs, the *Double Notched Butterfly, Type No. 25.*

It may be necessary at this time to regard this idea as a theory. Yet the writer prophesies that some day this theory will be proved. At this time, this theory could be proved if an unnotched *Butterfly* form could be located that would show one end broken away, and also showing that an attempt was made to saw or grind the damaged end into a notch. The writer regrets that he has not been able to observe such a form. He firmly believes that specimens of this kind exist and that some of them have been discovered.

We can, however, note many *Double Notched Butterfly* banner-stones that do show to a certain extent that small breaks were transformed into notches. These specimens can generally be identified because the outline of the patterns correspond to those that are unnotched. Frequently the shapes of the notches also indicate that they were added to unnotched blending forms. The main reason why it is difficult to prove this theory by those salvaged in this manner is that the notches are invariably completed, and generally obliterate any evidence of the original break. Yet, frequently, specimens are noted that do show a small portion of the original break. While this evidence noted may seem convincing to many there are others who may not regard it as being instrumental in the development of the ultimate *Butterfly* patterns of banded-slate.

Although we may believe that the type specimens of this particular group were brought about in this manner, it is not necessary to contend that all of the ultimate *Butterfly* patterns were made from damaged unnotched blending forms. Apparently, their number would be very few. It is more plausible to believe that after the design of the single and double-notched patterns were created, the Indians adopted these designs and made many objects in these shapes from this time on.

The type specimens of many other groups apparently were also developed suddenly and accidentally through breakage similar to those of the *Butterfly Group.* The *Notched Ovate (Heart Area)* and *Geniculate* patterns were undoubtedly created in this manner. The notches of the *Notched Ovate (Heart Area)* types vary greatly in size. Many of these notches are very small. It is very probable that the earliest notched patterns were made

with small notches to repair damaged ends, and then the notches were adopted. Thus, a new type design was created. Later the notches were made larger and larger until finally many of them became expanded to shapes which are indeed very decorative. The evolution of the designs of these patterns were therefore created in a similar manner to those of the *Notched Butterfly Group*. It is very possible that the original *Ovate* forms were damaged only at one end which was then transformed into a notch, and, apparently the other end of the stone was also notched so that each end would correspond, thus, rendering a conventional design. See page 377.

CLASSIFYING THE ULTIMATE DESIGNS OF BANNER-STONES BY MATERIAL

There are specimens of certain groups that have the lines and planes which are required to be ultimate designs but are made of materials other than the customary rule used for the making of type specimens. One may wonder why some are classified as blending forms while others are classified as types. The writer will explain this reason.

For example: the *Hour-glass* banner-stones of highly developed lines are frequently noted made of ferruginous slate, various granites, quartzites and other materials. While this fact may seem strange it is a complex situation easily solved. The reason is due perhaps to the fact that this ultimate design had reached its highest plane of construction but these particular patterns were made prior to the time when ferruginous quartz was adopted for their making.

The banner-stones found by Clarence B. Moore at Indian Knoll, Kentucky, is a good example to demonstrate this problem. Many of the *Hour-glass* patterns discovered, show highly developed construction, but were made of variously spotted granites. Further explanation of these particular specimens will be given in the chapter *Banner-Stones from Indian Knoll, Kentucky*.

Type specimens in general often show variations in design, yet their construction is so definitely developed that these variations do not interfere with their classification. It is only natural that type specimens should be slightly modified in shape. The construction of shape, and the materials used for the making of ultimate designs are the features that places these objects either in the class of *forms* or into the class of *types*.

The writer will explain more thoroughly the reason why certain banner-stones of highly developed lines are classified as blending forms while others are classified as types. To clarify this situation let us classify two *Hour-glass* banner-stones of highly developed lines of construction but made of different materials. Let us assume that the one is made of ferruginous quartz and the other is made of ferruginous slate. In the chapter *Adoption of Special Materials for Particular Types*, the writer has explained the importance of materials that were adopted in the latter part of the Banner-stone Era for the making of the type specimens. Therefore, these two patterns of the same construction but made of these two materials must be classified differently. The one made of ferruginous quartz would be classified as a *type* or *class C specimen*, the other made of ferruginous slate would be classified as a *blending form* or *class B specimen*. Although these two patterns had reached their highest plane of development from the constructional angle, there is no reason, however, to believe that both were made in the same time period. Because the specimen made of ferruginous slate proves it to be a related pattern and was made prior to the time when ferruginous quartz was adopted for making of the types, it must be classified as a blending form.

Let us, next, consider two *Hour-glass* banner-stones of under-developed lines but made of different materials. Let us suppose that the one is made of ferruginous slate and the other is made of some variety of quartz. Both of these patterns should be classified as blending forms. Even though the one specimen was made of ferruginous quartz, it must still be classified as a blending form, because it is not an ultimate design. There is no reason why it should be classified as a type because of the material from which it is made. Many of the early patterns were made from many varieties of stone including ferruginous quartz. These, however, are extremely rare. One can observe here the important use of the *A, B, C system* for the classification of banner-stones when so used.

By referring back to Plate 40 one can note two *Hour-glass* variations, one a *single-face* pattern, the other a *bi-face* pattern, both of which are classified as blending forms or *class B specimens*, because of the fact neither are made of ferruginous quartz. If, however, these two specimens were made of the adopted material they would be classified as types, or class C specimens. Another demonstration is shown in Plate 42.

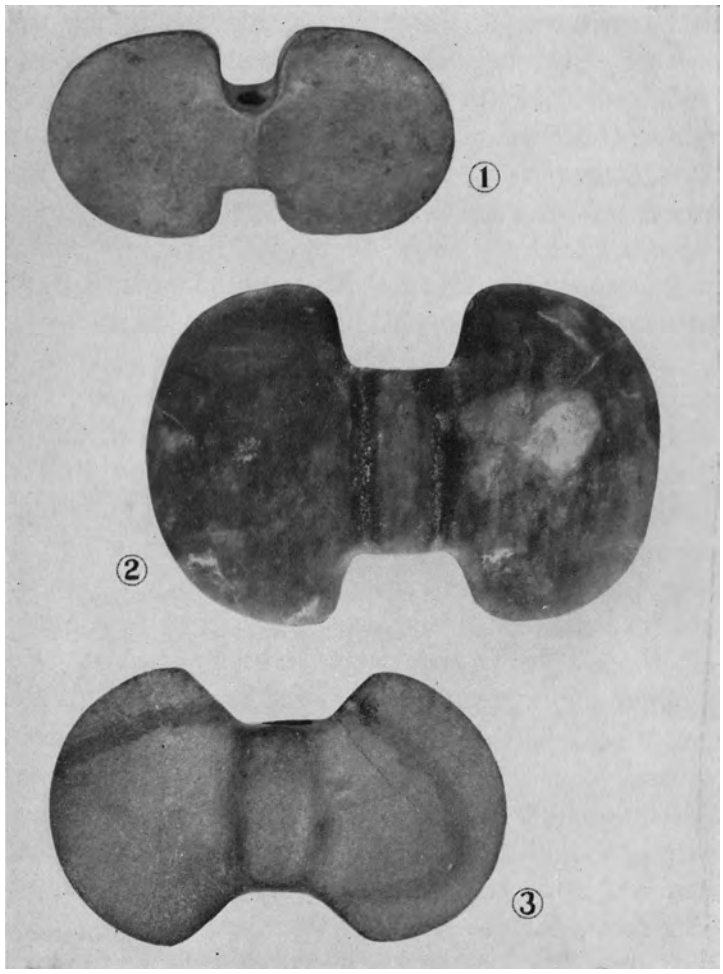


PLATE 42. This plate demonstrates the use of the A, B, C system for the classification of ultimate patterns by materials.

No. 1—JOHNSON COUNTY, ILLINOIS. Material, grayish tan clay-stone. Class B specimen.
Mrs. Blanche Busey King, Ancient Buried City, Wickliffe, Kentucky

No. 2—SOUTHERN INDIANA. Material, ferruginous quartz. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 3—PERRY COUNTY, ARKANSAS. Material, tan quartzite, Class B specimen. *From the author's collection*

Plate 1/2 actual size.

DRAWINGS SHOWING EVOLUTION OF TYPES

The so-called *Banner-stone Tree of Evolution* is arranged to show the origin and development of the different designs. This chart was created only after many years of research had been completed in analyzing the lines and planes of the many variations of patterns to discover the relationship of one design to another. Furthermore, after the evolution of the differently designed patterns were established, it was then an intricate problem to decide how to arrange them in this chart.

Following the chart are shown eight pen-and-ink drawings which are illustrated on separate pages to show the evolution of each type from the primary forms from which they developed. These drawings were prepared by the writer only after he had become thoroughly convinced that each of the classified types could be so arranged in the charts.

The construction of each pattern shown in these charts are illustrated by two views. One view is that of the end, the other view is that of the face. This is a very important feature. From these two views one can observe the evolutionary development brought about by gradual changes. These changes not only effected greatly the general outline of the majority of these objects, but also effected greatly their cross-sectional construction. Therefore, it is necessary for one to also study the end views to note these changes.

These charts also show the use of the *A*, *B*, *C system* by which all the diversity of shapes of banner-stones can now be classified from the lowest plane to the ultimate designs in a simple and systematic manner. Prior to this time there was no way to identify the underdeveloped specimens. Many of the ultimate designs were not even classified and the writer has taken the liberty to do so. Each of the classified types have been given a name and also a number by which one can also identify them. This feature is also very useful.

EXPLANATION OF PLATE 43

CLASSIFICATION OF THE EIGHT PRIMARY FORMS

No. 1—Southern Humped.
No. 2—Southern Triangular.
No. 3—Southern Double-edged.
No. 4—Southern Ovate.
No. 5—Southern Rectangular.
No. 6—Southern Boat-shaped.
No. 7—Heart-area Ovate.
No. 8—Southern Tubular.

CLASSIFICATION OF THE 32 TYPES, AND THE GENERAL ADOPTED MATERIAL THEY ARE MADE FROM.

No. 1—Humped—spotted granite. Heart Area.

No. 2—Concave Humped — miscellaneous material. Middle Mississippi Valley.

No. 3 — Shield-shape — miscellaneous materials. New England Area.

No. 4—Triangular—spotted granite. Upper Mississippi Valley.

No. 5 — Triangular — (dual type) — spotted granite. Upper Mississippi Valley.

No. 6—Hour-glass—ferruginous quartz. Mississippi Valley.

No. 7—Saddle-face — spotted granite. Middle and Upper Mississippi Valley.

No. 8 — Single-face Bottle — ferruginous quartz. Middle and Upper Mississippi Valley.

No. 9—Hinge-type — miscellaneous material. Middle and Lower Ohio River Valley.

No. 10 — Reel — banded-slate. Heart-Area.

No. 11—Double Bitted Axe — banded-slate. Heart Area.

No. 12—Shuttle — miscellaneous material. Middle Mississippi Valley.

No. 13 — Geniculate — banded-slate. Heart Area.

No. 14—Paneled—banded-slate. Heart-Area.

No. 15—Notched Ovate — spotted granite. Lower Alleghany Area.

No. 16 — Quartz Butterfly — ferruginous quartz. Mississippi Valley.

No. 17—Rectangular Barreled spotted granite. Middle and Upper Mississippi Valley.

No. 18—Wisconsin Winged — spotted granite. Middle and Upper Mississippi Valley.

No. 19—Undrilled Wisconsin Winged (fetish) — spotted granite. Middle and Upper Mississippi Valley.

No. 20—Notched Crescent—miscellaneous materials. New England and Ohio Valley Areas.

No. 21—Mississippi Valley Crescent — speckled granite. Middle Mississippi Valley.

No. 22—Knobbed Lunate—banded-slate. Heart Area.

No. 23—Curved Pick — banded-slate. Heart Area.

No. 24—Single Pronged Pick—banded-slate. Heart Area.

No. 25—Double Notched Butterfly — banded-slate. Heart Area.

No. 26—Undrilled Notched Butterfly — banded-slate. Heart Area.

No. 27—Notched Ovate — banded-slate. Heart Area.

No. 28—Double Crescent — banded-slate. Heart Area.

No. 29—Bi-face Bottle — ferruginous quartz. Lower Mississippi Valley.

No. 30—Fluted Ball and Tubular — banded-slate. Heart Area.

No. 31—Tubular—(Round or Oval)— banded-slate. Heart Area.

No. 32 — Tubular — (Square — Triangular — Single-face) — banded-slate. Heart Area.

BANNER-STONE TREE OF EVOLUTION

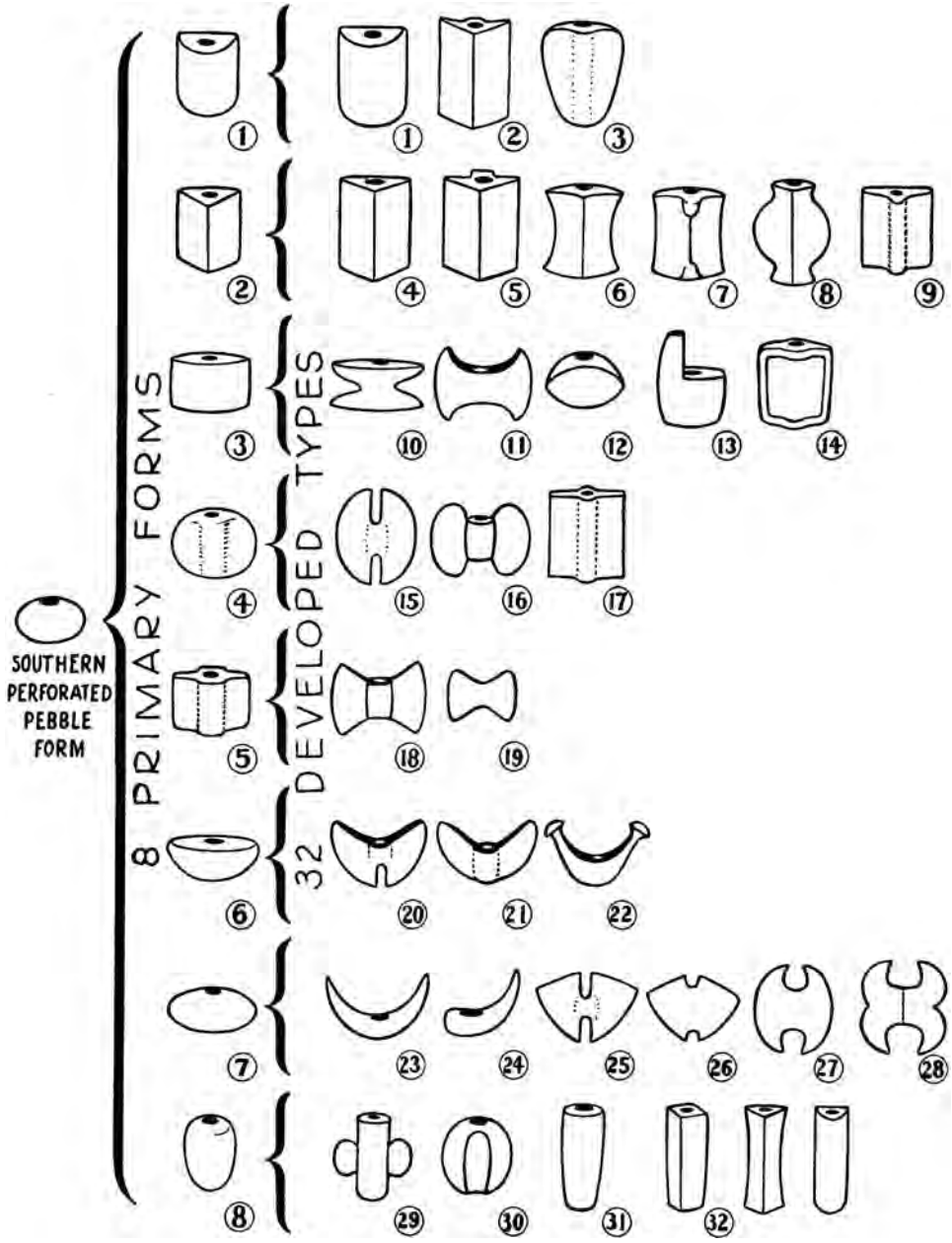


PLATE 43

EVOLUTION OF THE THREE TYPES DEVELOPED FROM THE SOUTHERN HUMPED PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

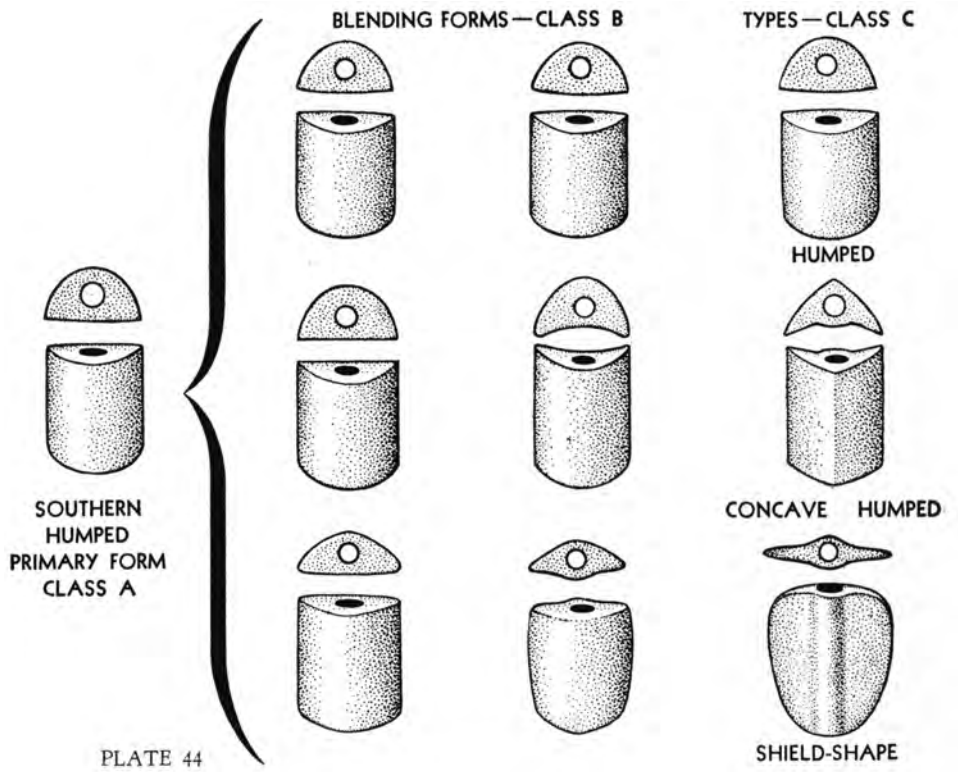


PLATE 45. Humped blending forms from the Middle Mississippi Valley Area.
No. 1—Graves County, Kentucky. Material, ferruginous slate.
No. 2—Henry County, Tennessee. Material, brown banded clay-stone.
No. 3 White County, Illinois. Material, ferruginous slate.
Plate 5/8 actual size. MRS. BLANCHE BUSEY KING, ANCIENT BURIED CITY, WICKLIFFE, KY.

EVOLUTION OF THE SIX TYPES DEVELOPED FROM THE SOUTHERN TRIANGULAR PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

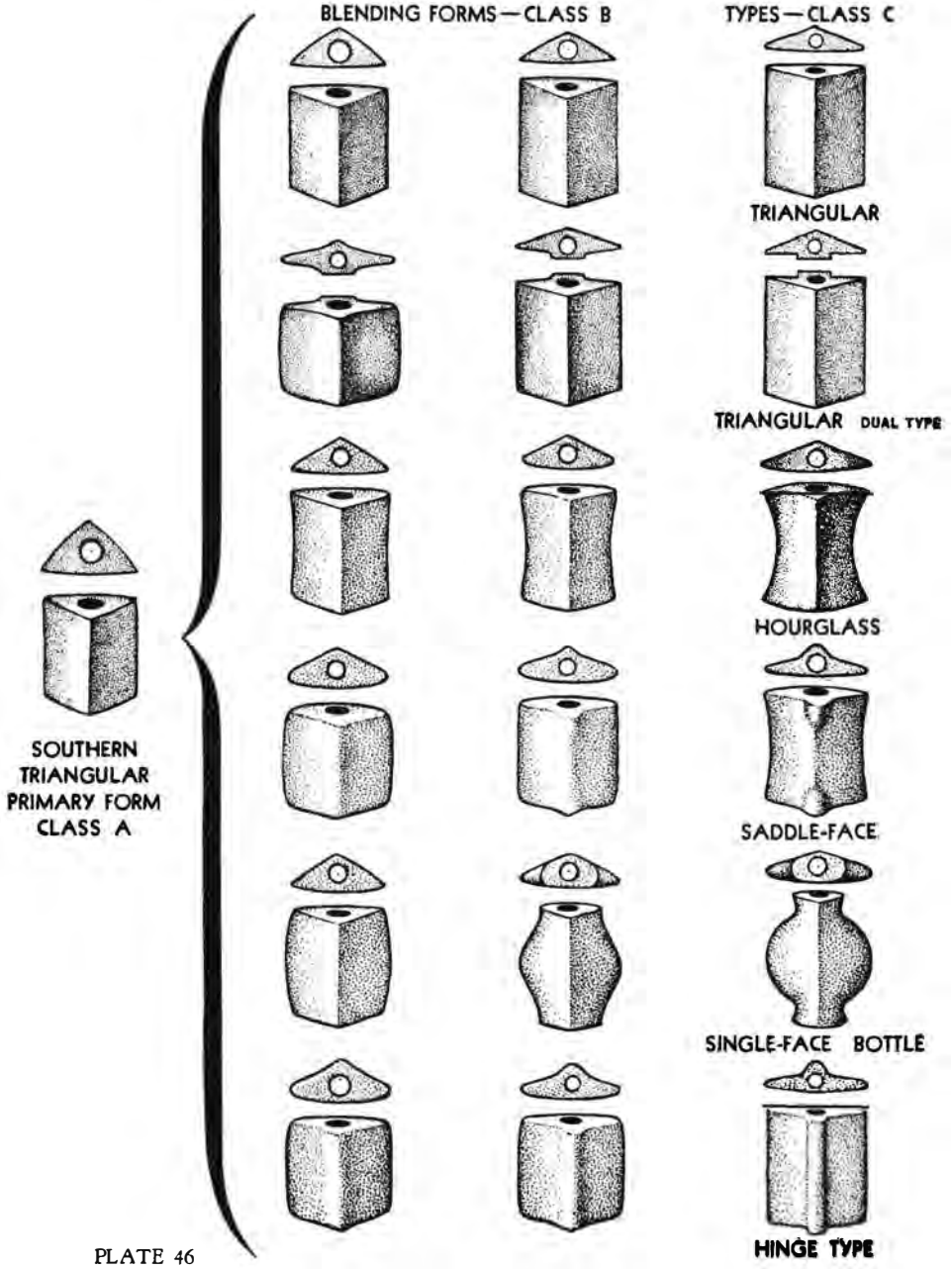


PLATE 46

EVOLUTION OF THE FIVE TYPES DEVELOPED FROM THE SOUTHERN DOUBLE-EDGED PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

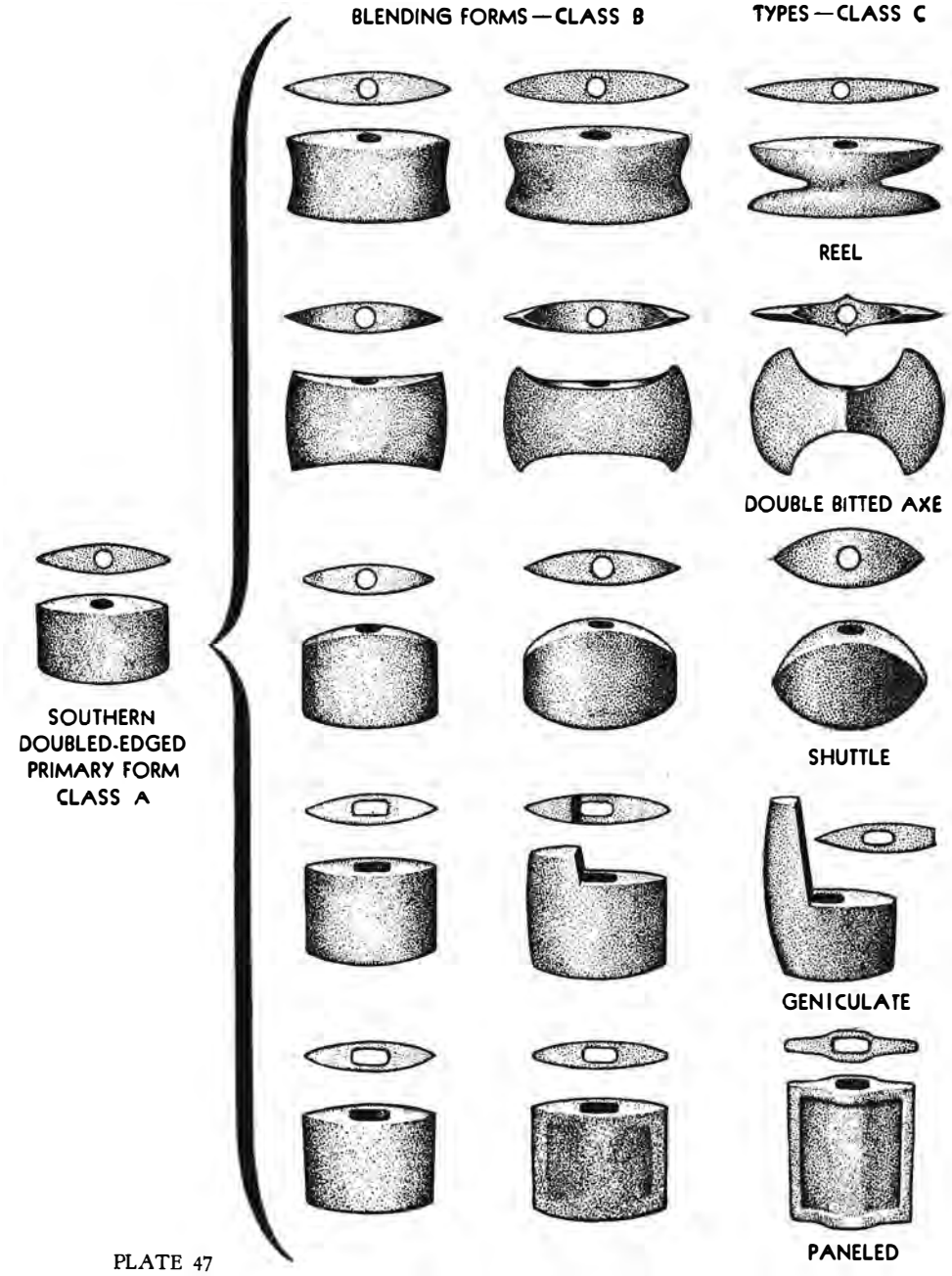


PLATE 47

EVOLUTION OF THE THREE TYPES DEVELOPED FROM THE SOUTHERN OVATE PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

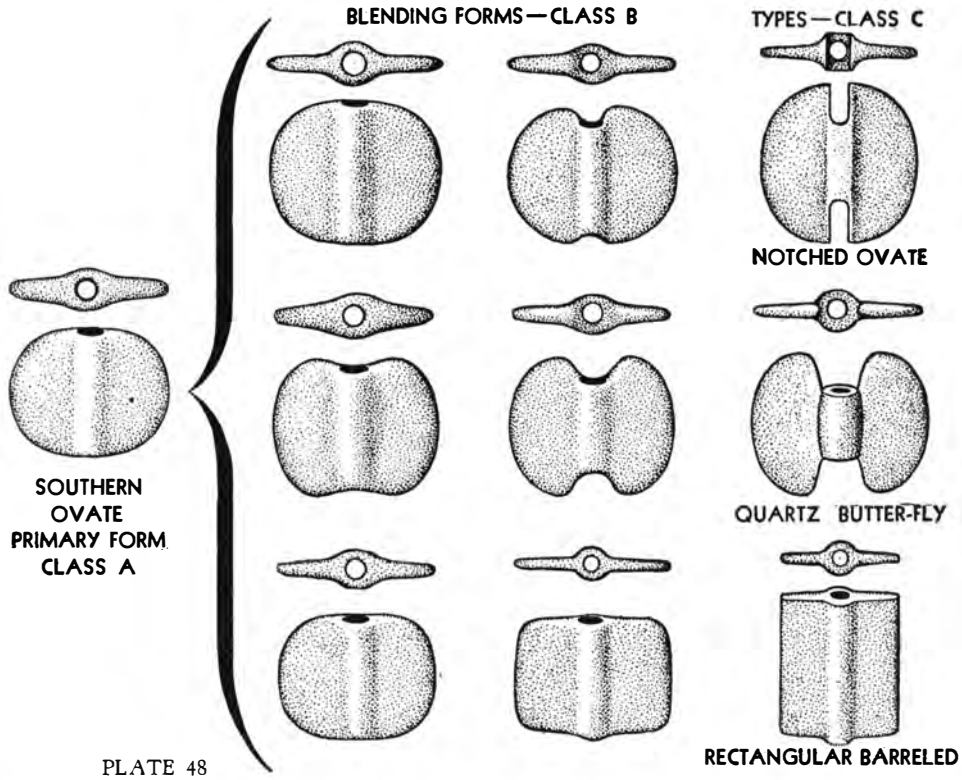


PLATE 48

PLATE 49. Rectangular Barreled patterns from the Mississippi Valley.
No. 1—Randolph County, Illinois. Material, mottled granite. Blending form.
No. 2—Marshall County, Kentucky. Material, green diorite, disintegrated. Type.
MRS. BLANCHE BUSEY KING, ANCIENT BURIED CITY, WICKLIFFE, KENTUCKY
No. 3—St. Charles County, Missouri. Material, red hematite. Blending form.
Plate 5/11 actual size. E. L. RENNO COLLECTION, ST. CHARLES, MISSOURI

EVOLUTION OF THE TWO TYPES DEVELOPED FROM THE SOUTHERN RECTANGULAR PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

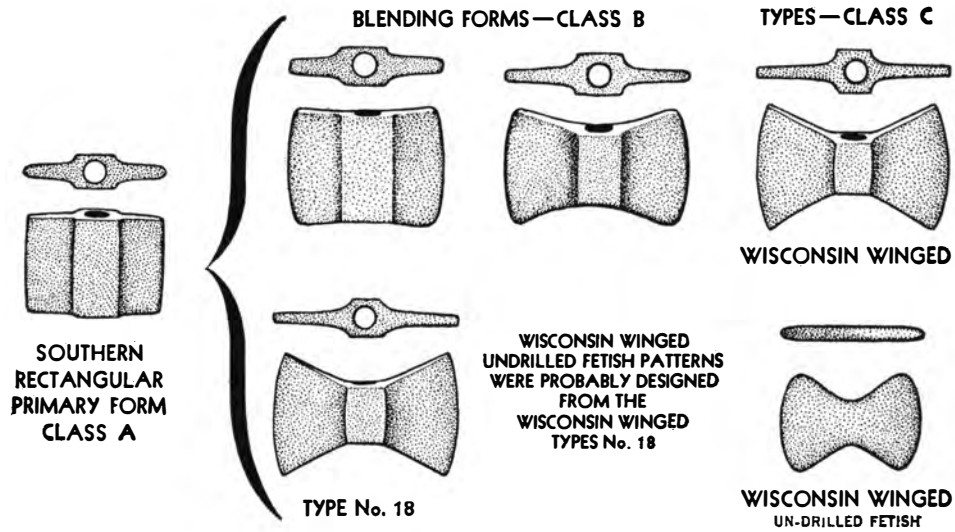


PLATE 50

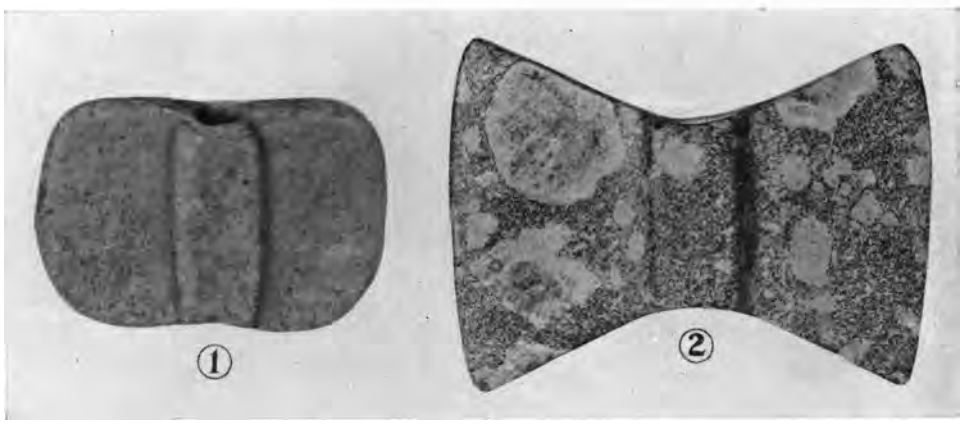


PLATE 51.

These two specimens clearly show the evolutionary development of the Wisconsin Winged type No. 18.

No. 1—Union County, Kentucky. Material, gray steatite. Class B specimen. FAIN WHITE KING COLLECTION, ANCIENT BURIED CITY, WICKLIFFE, KENTUCKY

No. 2—St. Joseph County, Indiana. Material, gray porphyry. Class C specimen. Plate 5/8 actual size. INDIANA HISTORICAL SOCIETY COLLECTION, INDIANAPOLIS, INDIANA

EVOLUTION OF THE THREE TYPES DEVELOPED FROM THE SOUTHERN BOAT-SHAPED PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

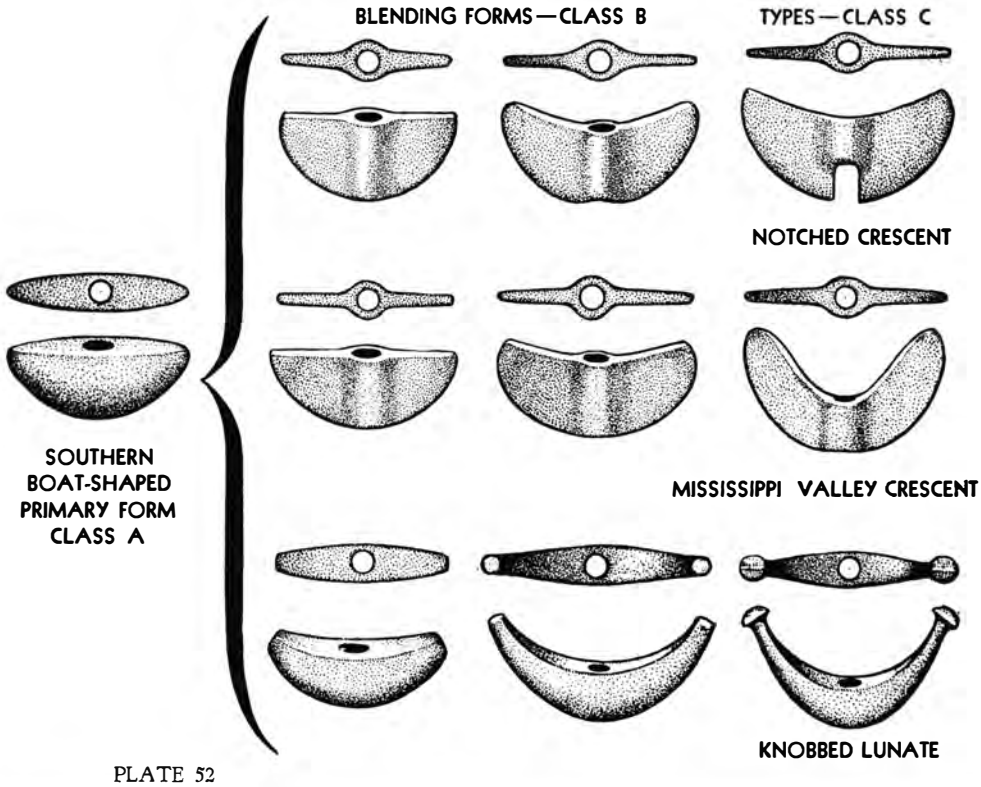


PLATE 52

PLATE 53.

Kentucky, County unknown. Material, light bluish gray sandy shale. This exceptionally lengthy object can be classified as a blending form belonging to the Knobbed Lunate Group. Note the flat plane on the one end through which was drilled the perforation. Plate 5/8 actual size.

FAIN WHITE KING COLLECTION, ANCIENT BURIED CITY, WICKLIFFE, KENTUCKY

EVOLUTION OF THE SIX TYPES DEVELOPED FROM THE HEART AREA OVATE PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

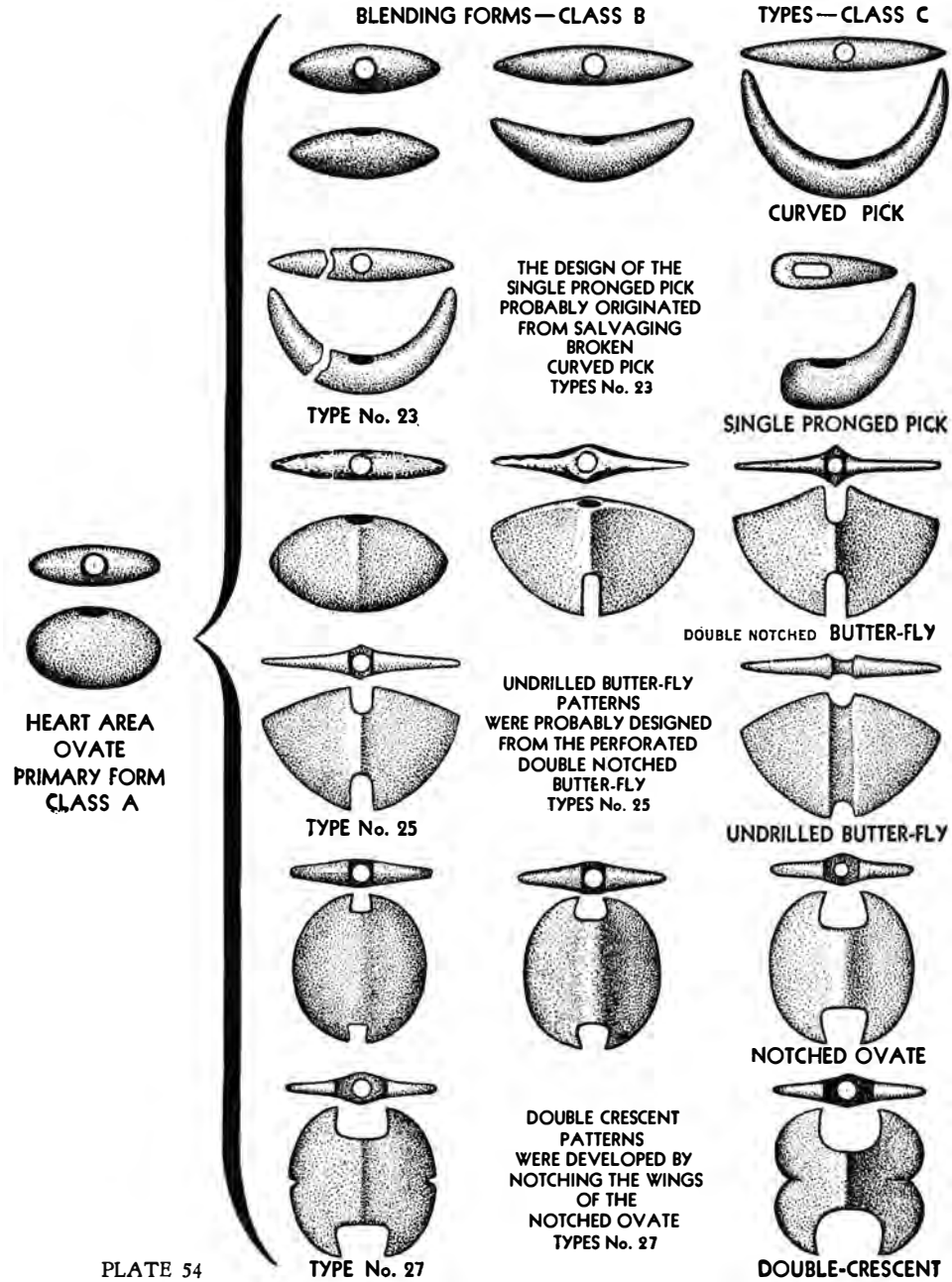


PLATE 54

EVOLUTION OF THE FOUR TYPES DEVELOPED FROM THE SOUTHERN TUBULAR PRIMARY FORM, CLASSIFIED BY THE A B C SYSTEM

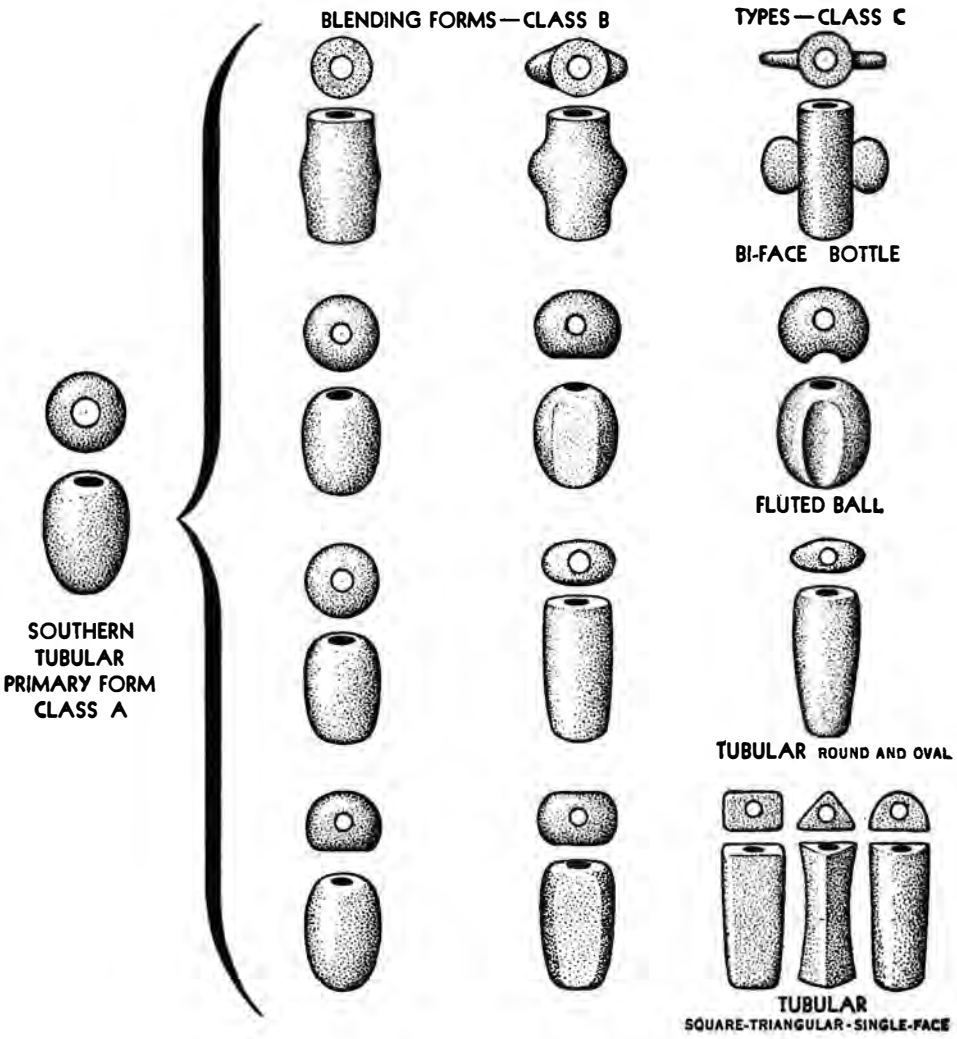


PLATE 55

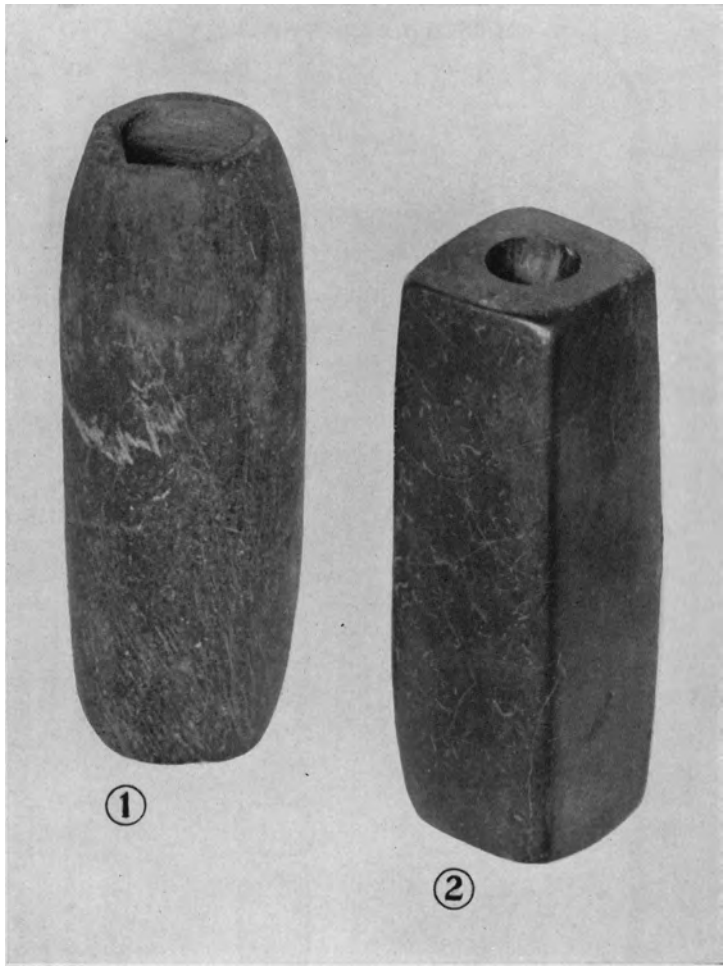


PLATE 56.

Heavily constructed Tubular patterns. Round and square variations.

No. 1—Ohio, County unknown. Material, green slate.

No. 2—Missouri, County unknown. Material, dark brown limonite.

Plate actual size. FROM THE AUTHOR'S COLLECTION

MAPS SHOWING DISTRIBUTION OF THE DIFFERENT TYPES

The maps illustrated on a number of the following pages show the distribution of the different type specimens. The range of distribution of each type is shown on a separate map. Since there are thirty-two classified types, it is necessary to show thirty-two maps. These maps prepared by the writer are arranged numerally according to *The Banner-Stone Tree of Evolution*. By starting with the type No. 1 and ending with the type No. 32, the entire number of differently designed patterns are represented. A picture of a single type is shown on the right side of a map and a picture of the primary form from which the type developed is shown on the left side of the map.

The areas of distribution are shown on the different maps in red and were established by following the system explained in the sub-chapter *Prospective Tabulation* on page 138.

The scheme was carried out by marking on separate maps of the United States the location of discovery of each of the type specimens which are illustrated in this volume and many others not shown.

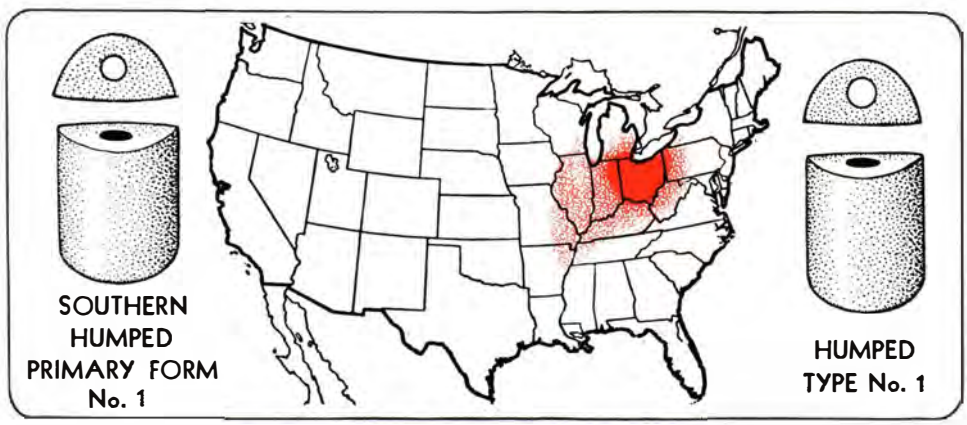


PLATE 57

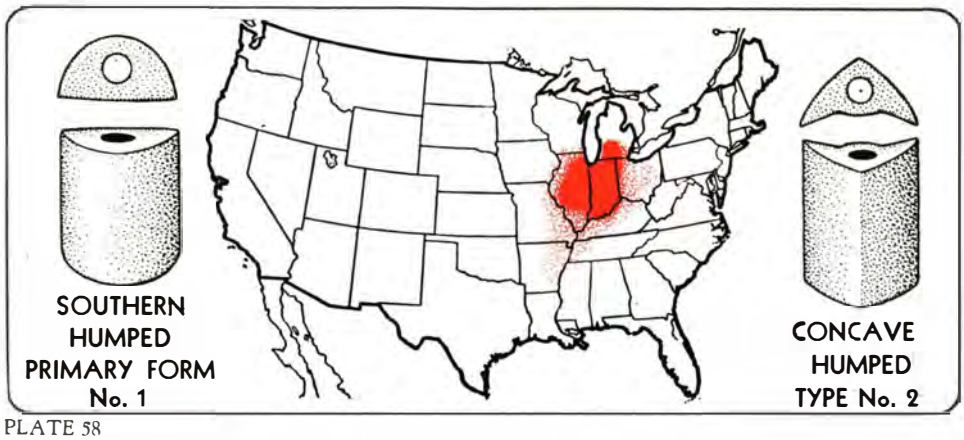


PLATE 58

PLATE 59

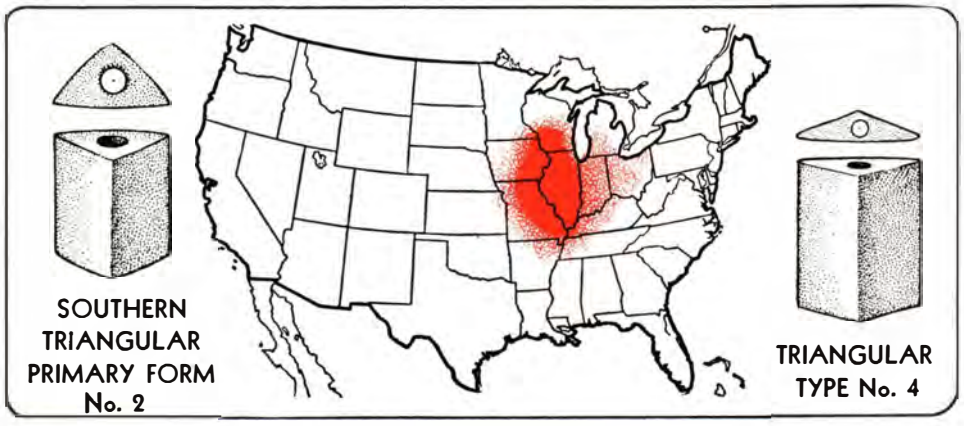


PLATE 60

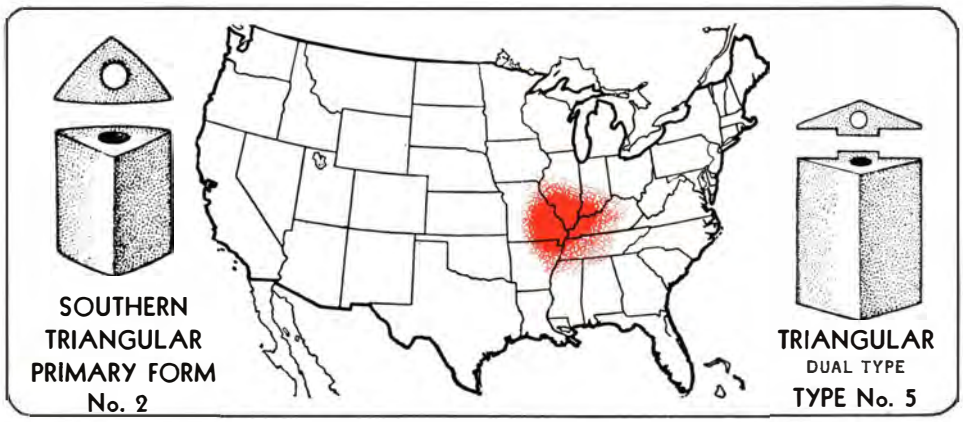
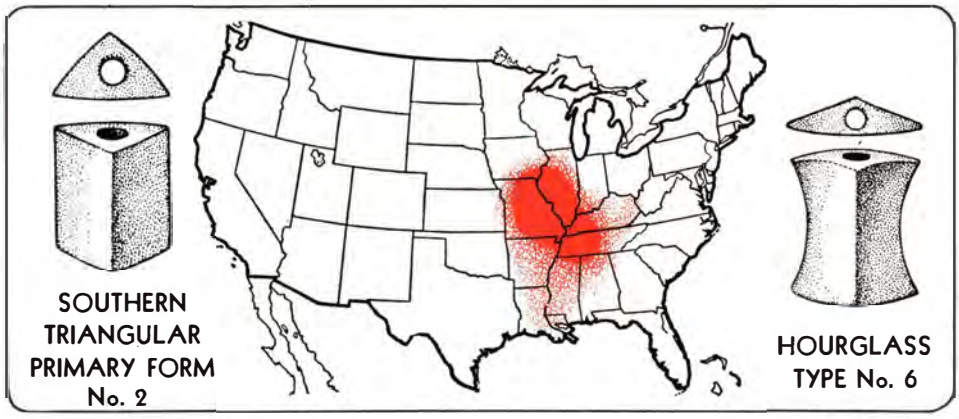


PLATE 61



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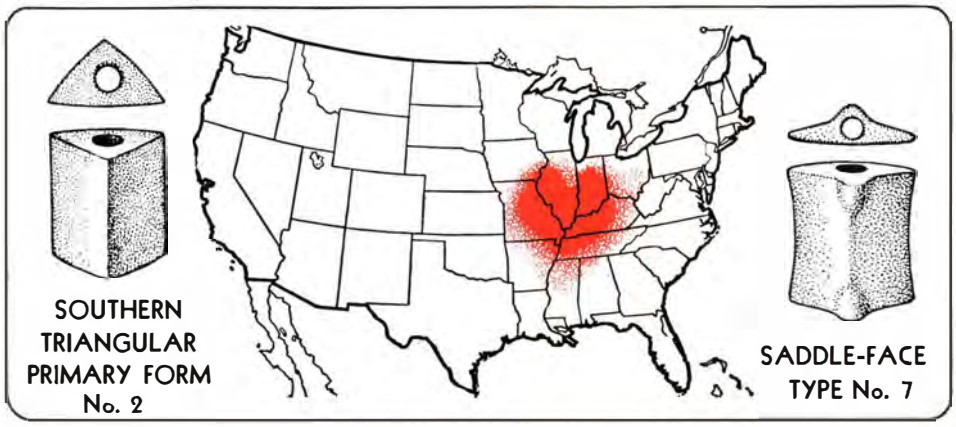

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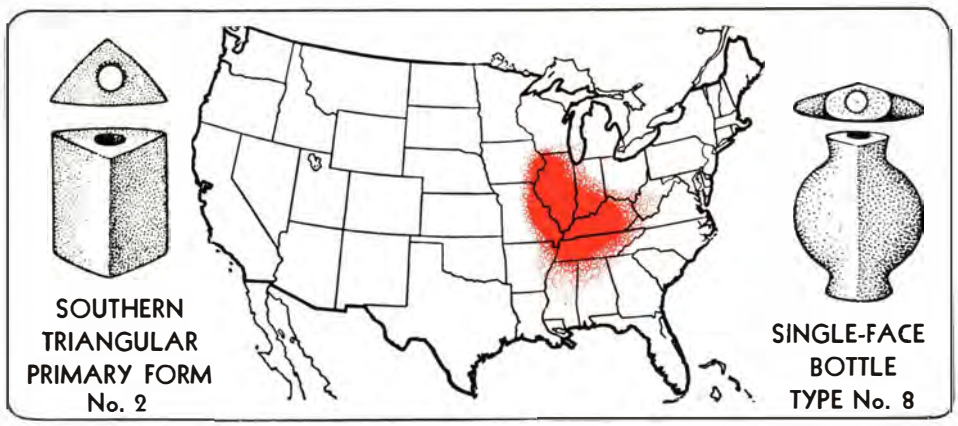


PLATE 64

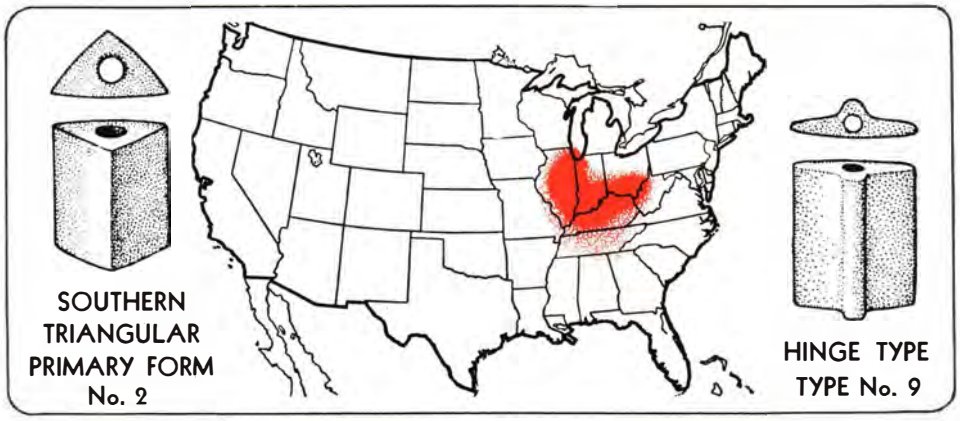
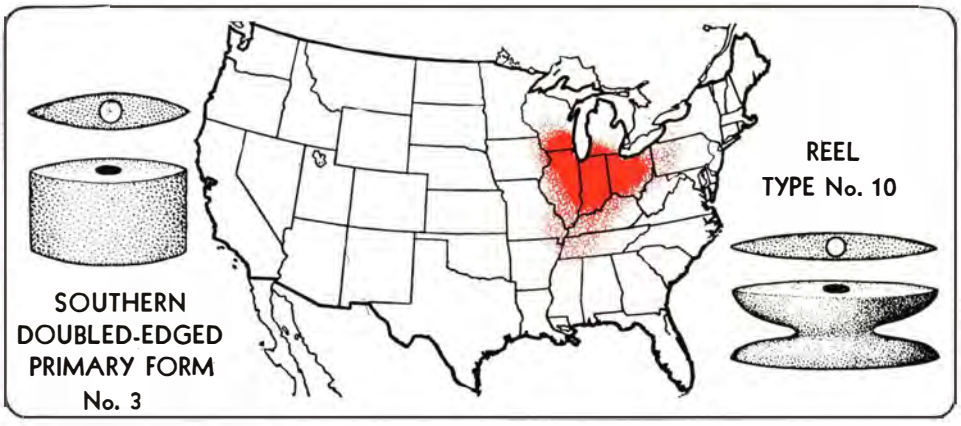


PLATE 65



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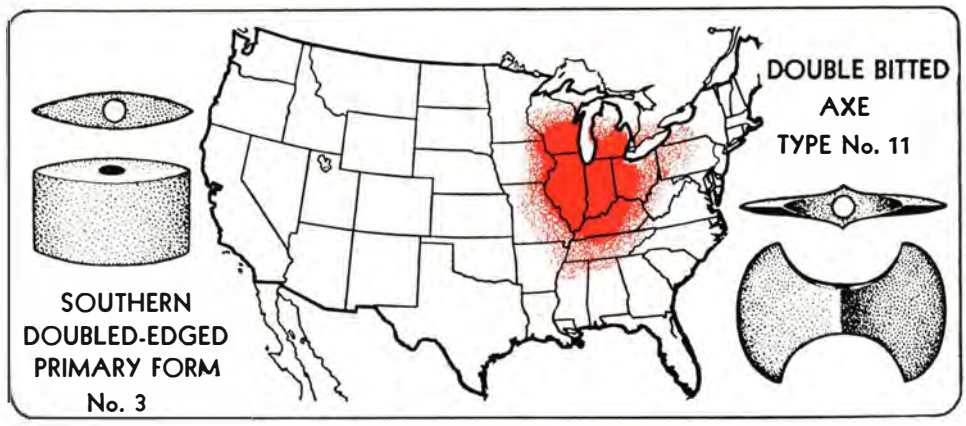

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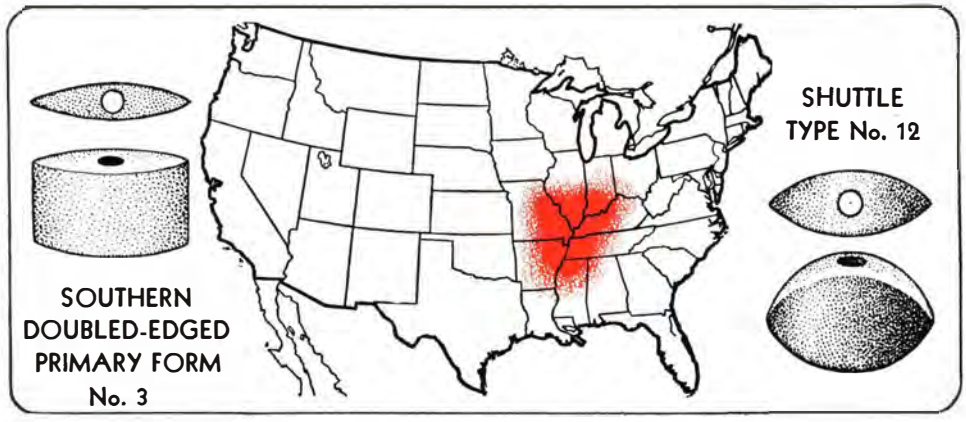

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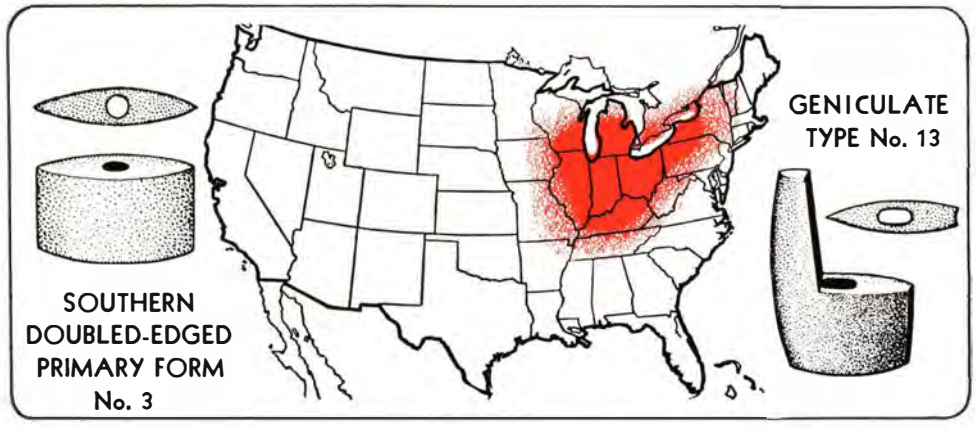


PLATE 69

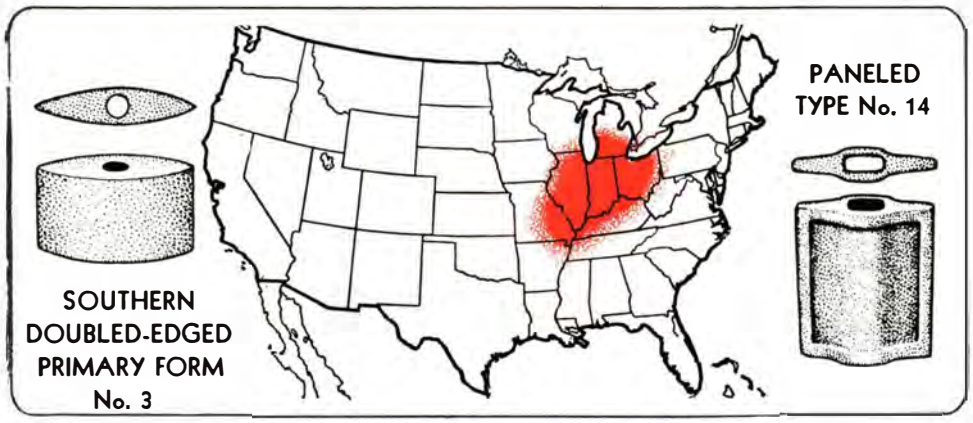
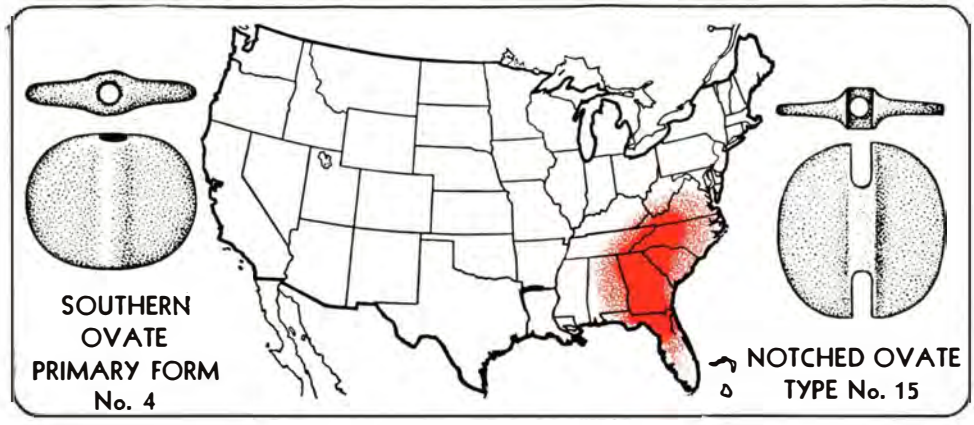


PLATE 70



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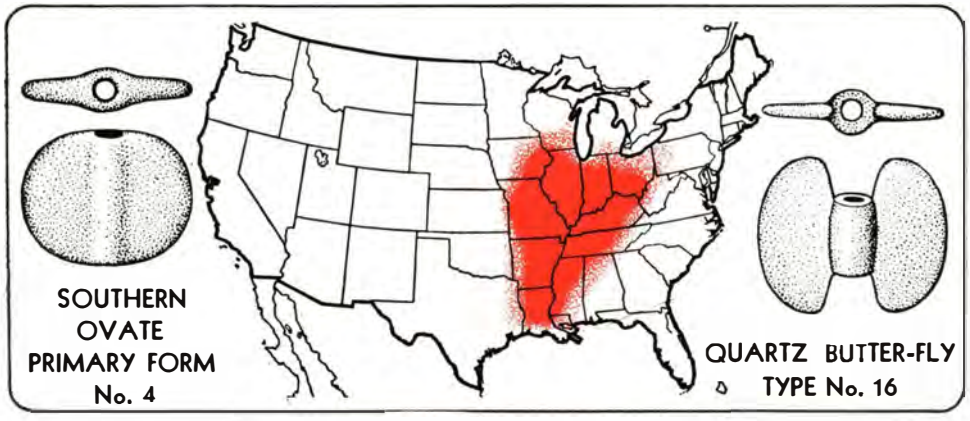

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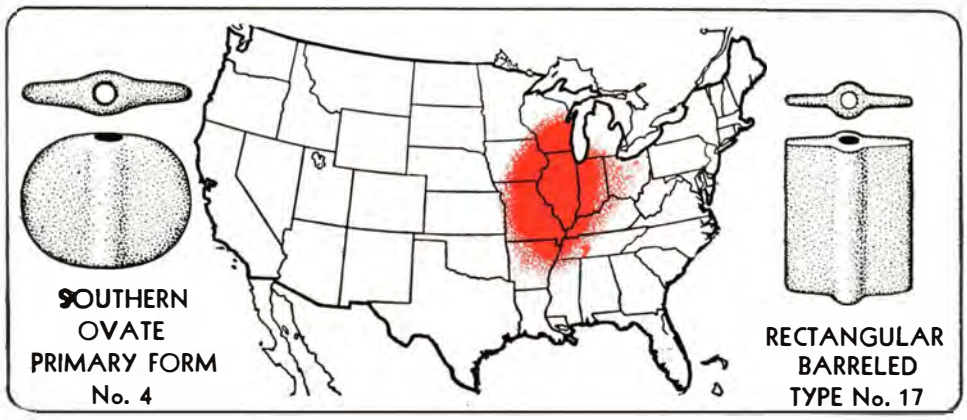

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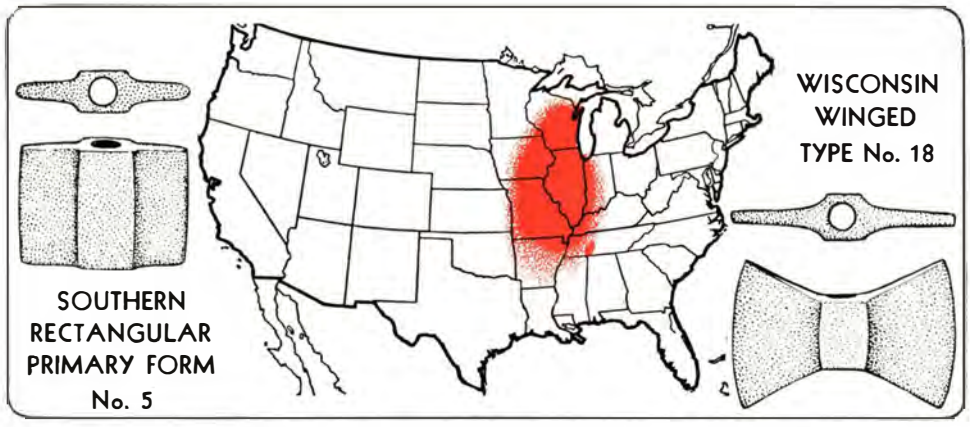

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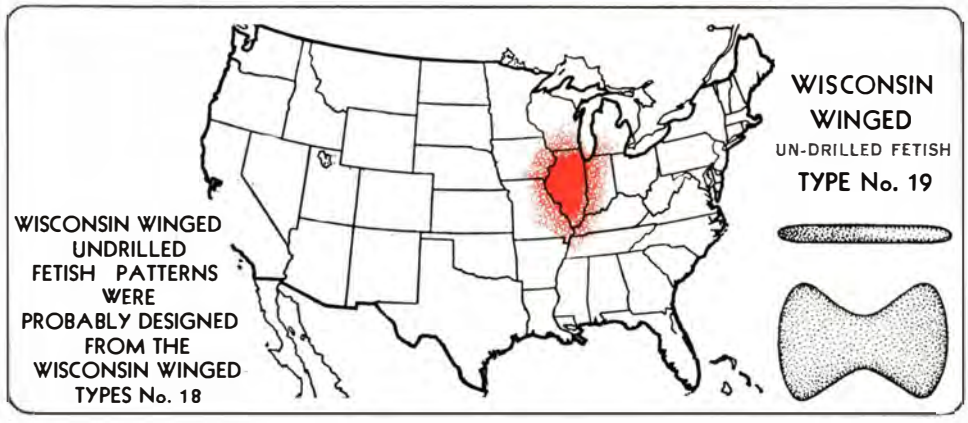

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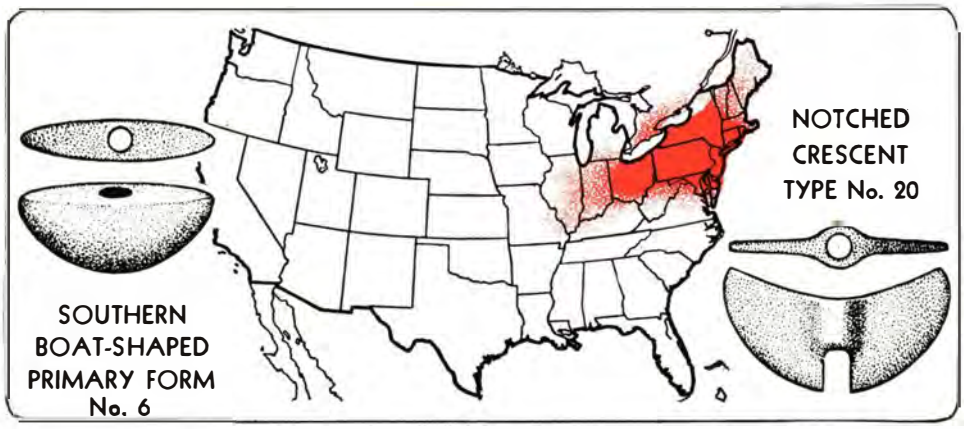

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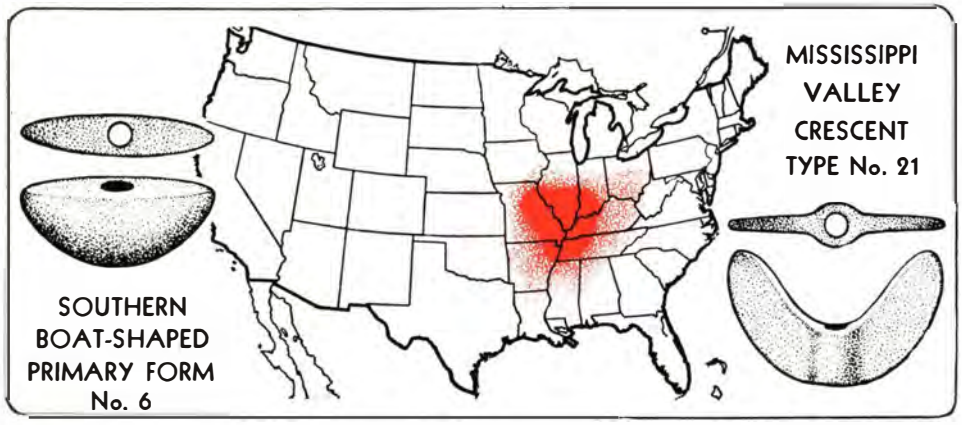

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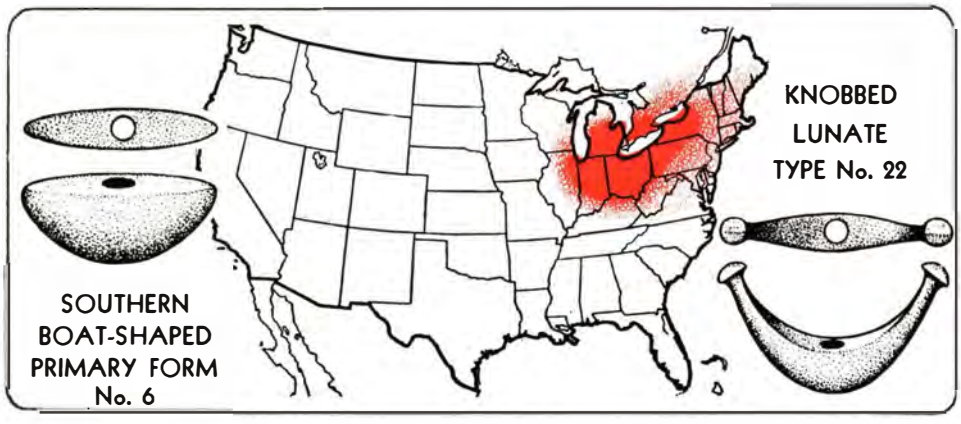

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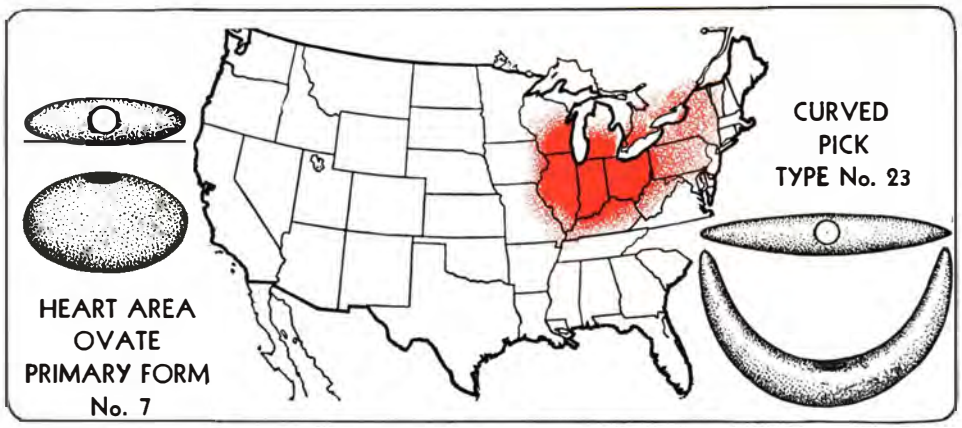

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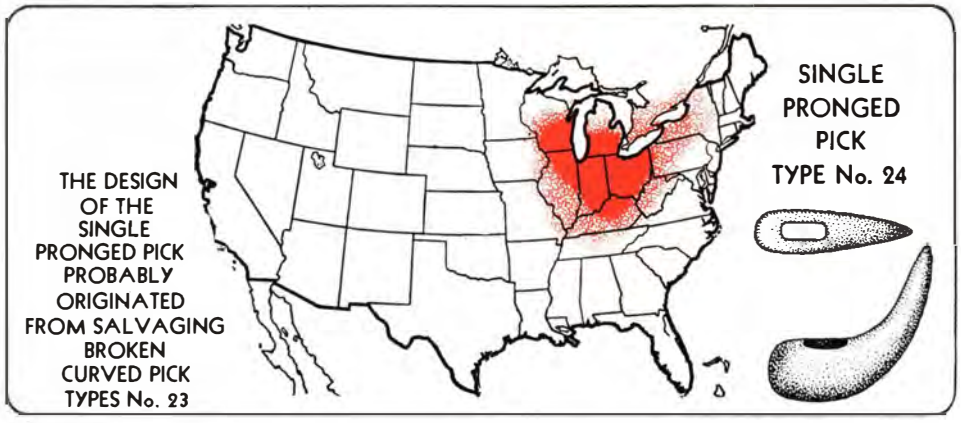

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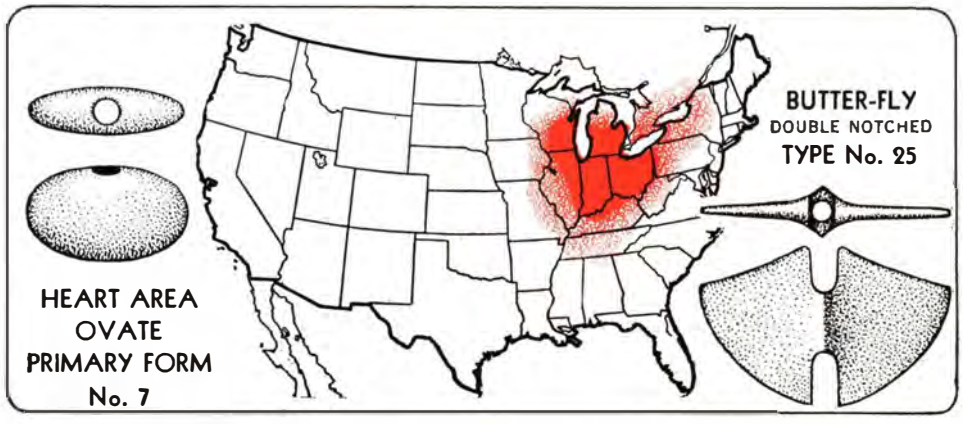

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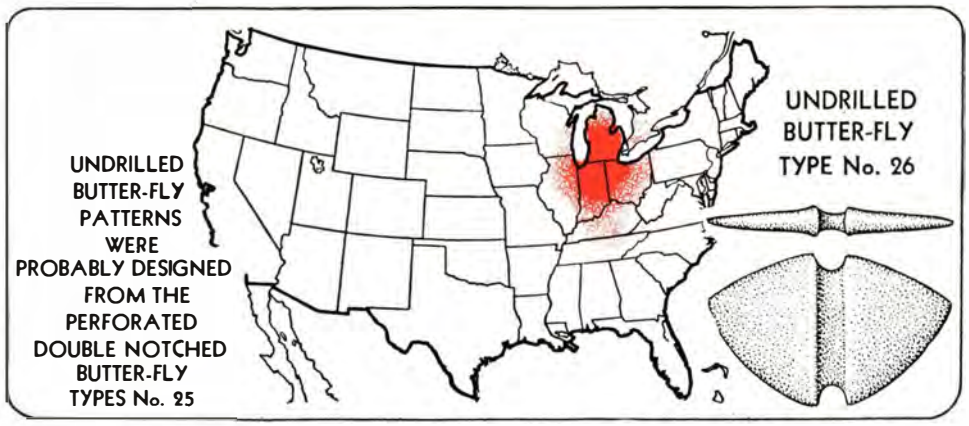

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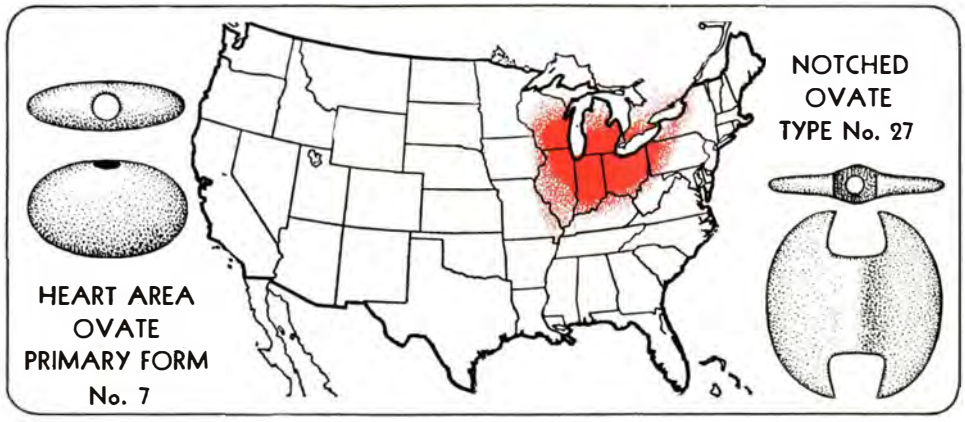

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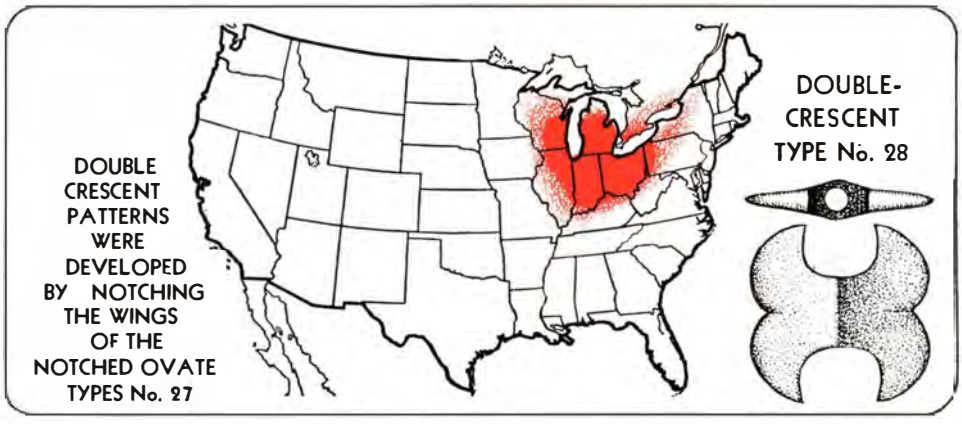

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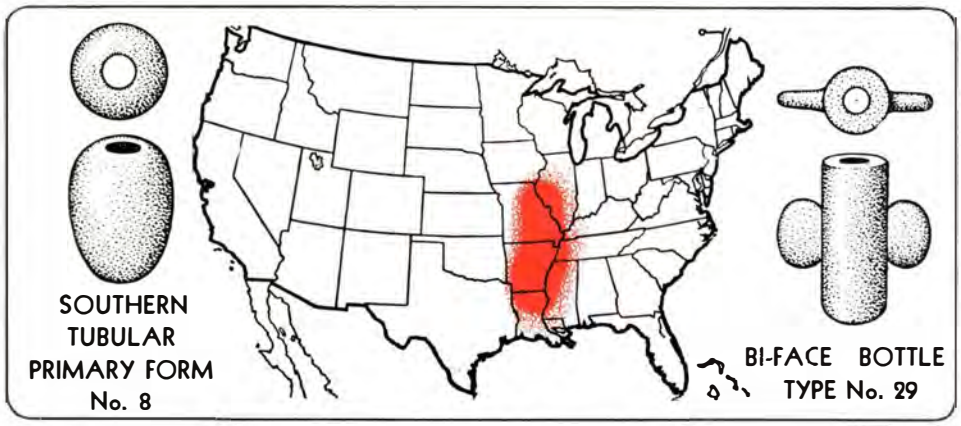

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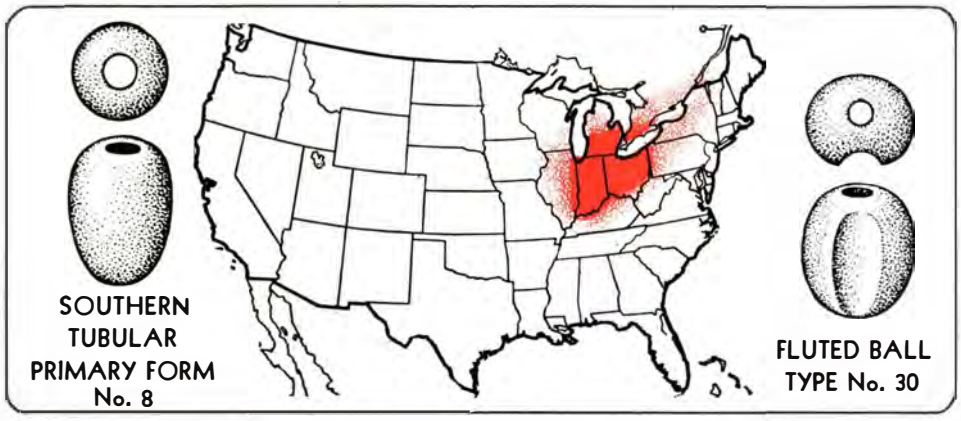

PLATE 86

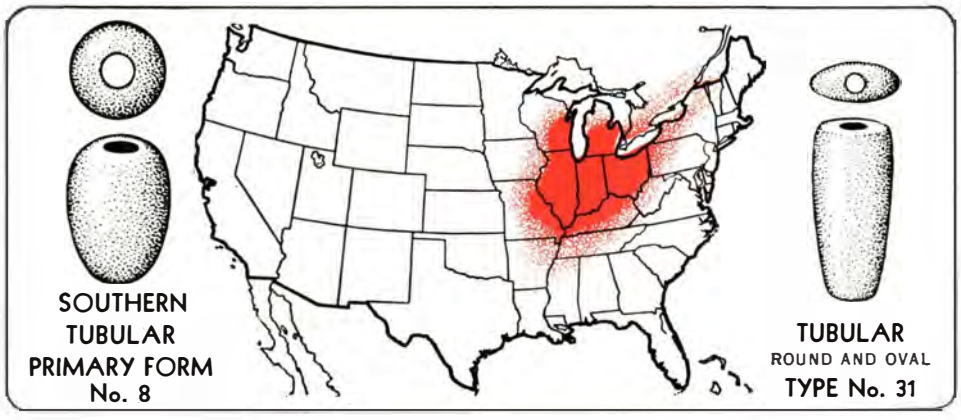

PLATE 87

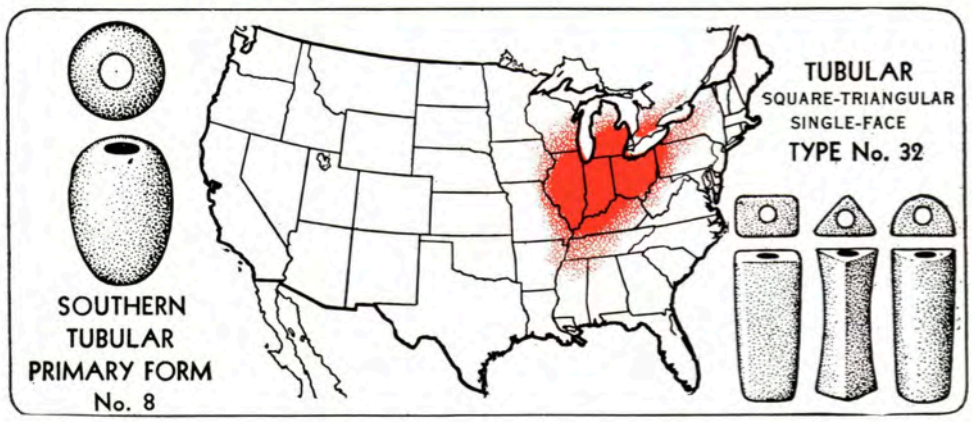

PLATE 88

PLATE 89.

Unusually designed Tubular patterns, barreled through the middle. It is very possible that Number 1 and 3 were originally unnotched Butterfly patterns which had one or both wings broken off, and were then salvaged by grinding down the damaged areas. Specimen Number 2 was undoubtedly made in this design. Therefore it is extremely rare.

Number 1—St. Joseph County, Indiana. Material, green banded-slate.
PHILIP C. SCHUPP COLLECTION, CHICAGO, ILLINOIS

Number 2—Chenango County, New York. Material, cream colored indurated clay-stone discolored brown from age. Surface highly polished.
DR. A. W. PENDERGAST COLLECTION, FAIRBURY, ILLINOIS

Number 3—Ohio, County unknown. Material, dark banded-slate.
Plate 5/7 actual size. CLAUDE U. STONE COLLECTION, PEORIA, ILLINOIS

DEGENERATION OF CULTURES

In the previous chapter *Ceremonial Uses of Banner-Stones* a theory is advanced for the various uses of these objects by the medicine men, witch-doctors, and priests. This theory also explains that each fakir probably strived to be the possessor of the largest and most beautifully made symbol to give him more power and greater prestige than his competitors.

In this chapter we shall take into consideration the great number of small and often poorly-made type speicmens that are noted in many of the groups. It is a difficult problem to find a definite reason why they were so made. Whether or not these seemingly insignificant symbols were the result of individual workmanship or were symbols of lesser importance than those larger and more beautifully made, one can not say.

One might surmise that these inferiorly-made ultimate designs were made prior to those larger and more beautiful. But after a thorough study of the sequence of modified patterns of many of the groups that contain these inferiorly-made specimens, the writer believes that such a theory cannot be definitely followed.

At the Milwaukee Public Museum on August 30, 1937, it was my pleasure to show Director Dr. S. A. Barrett, President G. A. West, Curator of Anthropology W. C. McKern, the greater part of the text and halftone proofs of this volume for any criticism and suggestions that they may have. At this session the writer explained in detail the scheme which he has adopted for the classification of all the modified patterns of banner-stones, and their source of origin. By starting with the primary forms from the Southern Area, the writer demonstrated how the twenty-four groups gradually developed into designs more complicated, more beautiful, and displaying finer workmanship through evolution farther north. During the discussions Prof. McKern casually inquired if the degeneration of cultures were taken into consideration, and if it were not possible that the simple primary forms from the Southern Area were nothing more than

degenerated patterns of the finer and more artistically designed specimens found farther north. In reply to this question, the writer stated that if cultures had degenerated and had thus effected the designing of banner-stones, the results probably would not have been centered in one small area. Furthermore, it would seem more plausible to believe that since the twenty-four groups of these stones are found within certain scattered sections of an enormous area (the eastern half of the United States) and had the cultures that made them declined, the so-called degenerated forms would occur in many small sections instead of one.

Prof. McKern's question, however, has not influenced the writer to deviate from his views concerning the origin and evolution of designs of these stones, but it has lead him to formulate a rather important theory. Although the suggestion by McKern concerning the degeneration of cultures was directed toward the primary forms which the writer considers are the origin of types, it seems more appropriate to apply this question in the opposite direction in the *Banner-stone Tree of Evolution*. All cultures have their ascendancy, reach their culmination, and decline. According to ancient history, this fact can be noted many times. It is probable that many of the Indian cultures that had made banner-stones did degenerate, particularly, it is my belief, in the latter part of the Banner-stone Era. It is certain that if this is true the effects of such a decline should be detected by the workmanship of banner-stones, as well as by pottery and other implements. It seems very apparent that the small and poorly made ultimate designs of many groups are specimens that were made by cultures that had degenerated.

To demonstrate this particular situation we shall study and analyze the evolution of the *Notched Butterfly Group*. The blending forms had undergone so many changes in designs before the type specimens were developed that it seems to be the best group to illustrate the question of degeneration of cultures. See Page 132.

First, there are the *Heart Area Ovate Primary Forms* which have thick wings that vary greatly in size. Many are very small. Yet occasionally specimens occur as large as eight inches in width. Following this simple pattern are the unnotched forms designed with thin wings. The majority being fairly large and well made. The next step taken toward a more elaborate design are the single-notched forms. These are far more

rare than the primary, unnotched forms, or the ultimate designs, the majority of which are well made, quite large and have thin wings. The ultimate patterns of this group are the *Double Notched Butterfly Type No. 25*. Many are beautifully made and exceptionally large with thin delicate wings measuring from four to nine inches in width.

We may now consider the great number of small and often poorly made ultimate patterns. It is not uncommon to encounter such specimens that are no more than two inches in width. It is these small and crudely-made *Butterfly* types that appear to be the result of cultures that had degenerated.

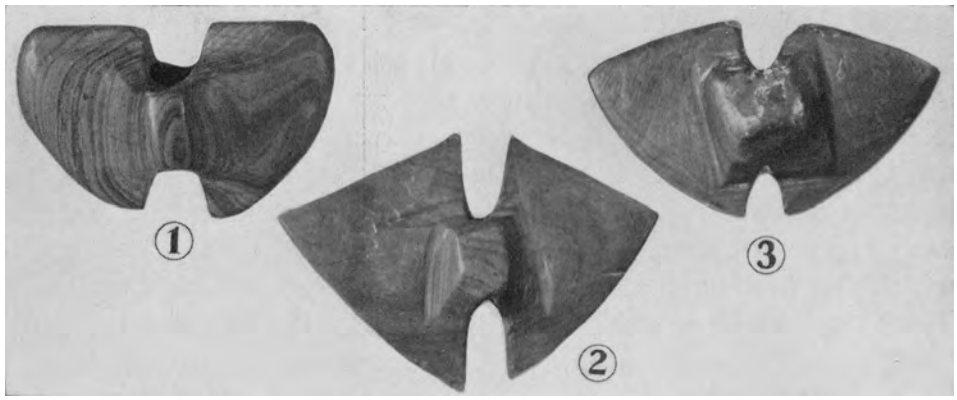

PLATE 90.

The three small and crudely made banded-slate Double Notched Butterfly types in this illustration are specimens that show what appears to be the result of a cultural decline.

Number 1 Kentucky, county unknown. This is the same specimen shown as No. 1 in Plate 241, page 519. Size 2 5/8 x 1 1/2 inches.

FROM THE COLLECTION OF G. I. GROVES, CHICAGO, ILLINOIS.

Number 2 Wayne County, Ohio. Size 3 1/4 x 2 1/8 inches.

FROM THE COLLECTION OF A. D. GRUTZMACHER, MUKWANAGO, WISCONSIN.

Number 3 Wayne County, Ohio.

FROM THE COLLECTION OF A. D. GRUTZMACHER, MUKWANAGO, WISCONSIN.

Plate 5/8 actual size.

To illustrate this complex situation the writer shows in Plate 90 three of these crudely made *Double Notched Butterfly* banner-stones of banded-slate that must be classified as types regardless of their size or poor workmanship. These small specimens shown in this illustration may

seem rather too insignificant to be of great importance, especially in view of the fact that we consider those larger and more beautifully made as symbols of great importance. It is for this reason that these inferior types create a perplexing problem. In Plate 244 on page 525 is shown a number of the largest and finest *Double Notched* Butterfly patterns observed, and again for comparison a number of the smallest ones.

The writer has found that many of the groups do not have small or inferiorly-made types, which one may regard as degenerated patterns. This fact is due perhaps to the extremely small number discovered that comprise these certain groups. It seems that a number of ultimate designs developed to a high degree of craftsmanship, and then the development stopped abruptly before a cultural decline set in.

It is also difficult to detect by the shapes of patterns of certain other groups whether or not the cultures that made them had degenerated. The reason is that the designs of the primary forms, blending forms, and types are very similar to one another. For example: the lines and planes of the *Humped* patterns correspond to a certain extent. Yet one can classify these objects by the *A, B, C system*, from the locations in which they are found, and by the materials from which they are made. There seems to be no specimens of the *Humped Group* that may signify that the cultures which made them had degenerated.

There are also a number of other groups that do not seem to show any degeneracy of design. Possibly the making of these groups had been discontinued long before many of the other groups. Later, however, the cultures that made some of the designs that survived others, started to decline until the custom of making banner-stones finally became obsolete. Many of the Indian cultures of North American were undoubtedly on the decline when the white man discovered America.

This is still another point to consider, and that is the people of one small area who were not so skilled as those of a nearby area. Let us assume that the people of such two areas had made banner-stones of the same type design. The results would show that the specimens from the one area were crudely made, while those of the other area were more skillfully made. It is very possible that the people in the one area who made the crude specimens had degenerated sooner than those of the other area.

MATERIALS USED

Archaeologists have discovered that the prehistoric Indians made artifacts from almost every variety of rock with which they came in contact. Some rocks, however, were more suitable for the making of certain objects than others, depending greatly upon the proposed uses of the objects being made.

The hard compact varieties of granite were selected for the making of axes, celts, and many other utility tools because these rocks are durable. The beautifully colored and attractively marked rocks were extensively used for the making of ornaments and problematical stones, thus adding to their charm. Although this situation is more or less the general rule, there are of course exceptions. Occasionally one can observe problematical stones made of unattractive materials and will also observe axes, celts, and utility tools made of beautifully colored or spotted materials. Such objects are, however, quite rare.

It seems that many years ago the archaeologists were not aware of the fact that some specimens of certain classes of problematicals were rarer than others because of the materials from which they were made. The oversight accountable is because the archaeologists at that time had not observed classes of objects in rather great numbers, and thus were not able to know which materials were commonly used and which materials were rarely used.

Today there exists among those interested in this field a keen interest and appreciation of ceremonial and problematical stones, as well as other classes of artifacts, made of highly colored, beautifully spotted and other rarely used materials.

For example: countless bird-stones have been discovered made of banded-slate, while those made of spotted granites, porphyry and various varieties of quartz are indeed fewer in number. Therefore, those made of banded-slate are considered as being quite common and those made

of the harder and more attractive granite and quartz materials are considered as being quite rare. Thus one cultivates at once a great appreciation for artifacts of this kind which is made of rarely-used or so-called rare varieties of stone. The same situation noted to bird-stones is also true to banner-stones and other classes of artifacts in general.

Although materials play an important part toward influencing one to regard many objects as being unusually rare, there are other factors that must be considered before a specimen is superb, such as skilled workmanship. At times, it is difficult to determine whether the materials used or the workmanship displayed in the making of certain objects, is the more important factor. Perhaps workmanship should take first place and materials used, second place. If, however, an object displays exquisite workmanship and also is made of a so-called rare material, the combination is perfect and the result is a superb specimen.

Recently the writer observed for the first time a crudely made bird-stone made of red hematite. The design was that of a bird's head which extended from a flat oval base. This design is commonly called "horse-head," a very unbecoming name. Because this bird-stone is made of red-hematite, it may be regarded as an extremely rare artifact. But due to the fact that the workmanship displayed is crude, it is far from being superb. If, however, an object of this kind were found made of a fine grade of black hematite, or even red hematite, and if it also displayed exquisite workmanship, it would, then, be superb and priceless.

Probably the most commonly used material for the making of banner-stones was banded-slate. The reason is due mainly to the fact that this material is very abundant in the banded-slate or Heart Area, that it was easily worked, and that it was very attractive.

South of the Ohio River including the central and western part of the states of Tennessee and Kentucky, and also the eastern part of Arkansas and Missouri, many banner-stones are found made of ferruginous slate.

Various granites were extensively used throughout the Mississippi River Valley and the lower Ohio River Valley, but more rarely in the Southern Area. Although banner-stones made of granite are occasionally found in the Heart Area, their designs are usually those which are characteristic of the Mississippi or Lower Ohio Valley Areas and were undoubtedly carried there. There is but one group of these stones found

in the State of Ohio which obviously shows that the type specimens were made of spotted granites. This is the *Humped Type No. 1.*

The most beautiful material that the Indians used for the making of banner-stones was ferruginous quartz. This material is commonly called rose quartz by many collectors, but this term is wrong. Rose quartz is a clear translucent form of quartz, uniformly pink in color, and is found in the Black Hills. The Indians did not have access to this variety of quartz nor did they travel to the territory where it occurs to secure it. If this beautiful material had been available, the Indians would have unquestionably used it.

Seldom are banner-stones of highly developed lines found made of plain compact granites, so commonly used for the making of their axes and celts. These unattractive materials, however, were occasionally used in the Southern Area for making some of the primary and blending forms.

It is not unusual for one to note these stones made of red hematite. The writer has heard from a reliable source of a black hematite winged pattern found in Jersey County, Illinois. There was supposed to be a specimen in the E. W. Payne collection made of gelina or lead ore, which was found in the state of Missouri. Apparently the material from which this object was made was secured in this state. It is not uncommon to note specimens in the Lower Ohio Valley Area made of limestone. Most generally, this material weathers from *age*, but when these stones were in use they were probably polished and quite attractive.

For many years the collectors have shown a desire to become more and more acquainted with the various materials from which the relics are made. It is, however, quite easy for those who have had but little experience to be able to know the difference between slate, granite and quartz rocks, but this knowledge is not sufficient. The writer conceived the idea that if some of the commoner rocks which were used for the making of banner-stones and other classes of artifacts were described, the information would be helpful to many. The writer wishes to give credit to Prof. George Litchworth English* for description of the rocks obtained from his remarkable book *Getting Acquainted with Minerals.*

A description of the common rocks are listed as follows:

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*English, George Litchworth. "*Getting Acquainted with Minerals.*" Rochester, N. Y. Mineralogical Publishing Co., 1934.

THE THREE GROUPS OF ROCKS

Rocks are usually divided according to their origin into three groups, as follows:

Group No. 1 . . . . . IGNEOUS
Group No. 2 . . . . . SEDIMENTARY
Group No. 3 . . . . . METAMORPHIC

IGNEOUS ROCKS

IGNEOUS ROCKS were once in a liquid state and their present solid condition is due to "cooling" or "freezing" of the material.

CLASS A—COARSE GRAINED IGNEOUS ROCKS

IGNEOUS ROCKS, generally light in color, and have an even texture. They are composed of quartz and feldspar together with either mica or hornblende or both. The feldspar can easily be recognized by the sparkle of its cleavage surfaces. Its color may be various shades of white, cream, flesh, pink or red and yellow. Shades of yellow are rather rare. The quartz is generally clear, milky or smoky and shows a glassy luster and has no cleavage. The mica is silvery white or colorless. Frequently muscovite, or black biotite, or both is also present. When hornblende is present, it is of a greenish black color.

PEGMATITE is very coarsely grained crystalline granite.

SYENITE resembles granite except that it contains but little if any quartz.

DIORITE is a coarse to medium grained igneous rock with an even texture, and is greenish black in color. Usually this rock consists mainly of hornblende or pyroxene which gives it color. It also consists of a smaller quantity of feldspar. Biotite-mica may also be present in considerable quantities, and pyroxene may replace some of the hornblende. Quartz is most notably absent. If quartz is present the rock is called quartz-diorite.

DIABASE is a related rock usually having a fine texture. Frequently lath-shaped feldspars embedded in augite may be seen with the naked eye.

GABBRO is another common rock, similar in appearance to that of diorite. It is difficult to distinguish the difference between the two. The chief difference is that pyroxene or hornblende is the predominant mineral with the presence of feldspar in smaller quantities. No quartz is present. The color is similar to that of diorite, a greenish black or dark gray. The texture is even.

DOLERITE is a fine-grained variety of either garbbro or diorite. The dark colored minerals are either hornblende or pyroxene, but these particles are too small to be seen with the naked eye.

PERIDOTITE is a coarse or medium-coarse grained rock consisting almost entirely of iron-magnesium minerals. The color is a greenish black.

CLASS B—FINE GRAINED IGNEOUS ROCKS

Rocks of a fine-grained texture of igneous or volcanic origin may be roughly classified under two headings, felsite and basalt. Felsite and basalt felsite includes the dense, and fine grained rocks with a stony texture which are not very dark in color. The colors of felsite vary greatly and include shades of gray, light pink, yellow to brown and less commonly, white.

BASALT is a fine grained rock with a stony texture, and most generally black in color.

PORPHYRY has an attractive spotted appearance. If one or more of the component minerals of the rock crystallizes out into more or less perfectly formed spots, it is called porphyry. Porphyries occur in granite, diorite and many other rocks besides the felsites and basalts.

GLASSY ROCKS are those of volcanic origin. If the output cools very rapidly, the elements do not combine to form definite minerals and the result is a volcanic glass. If the entire rock consists of this glass and has a vitreous luster it is called obsidian, the color is most commonly black. Less frequently it is brown, red, purplish and occasionally banded.

SEDIMENTARY ROCKS

The materials of which sedimentary rocks are composed have come from other previously existing rocks. Occurring in horizontal layers, these rocks were laid down in beds of sediment in quiet waters. Gradually these beds consolidated and were cemented together into rocks.

SANDSTONE is composed of grains of sand. Usually the grains are quartz, and may be large or small.

BRECCIA is a form of sandstone composed of angular fragments. The conglomerate is a form of sandstone made up of rounded pebbles, cemented together with silica, calcite, iron oxide, or at times a hardened clay. The color of conglomerate rock depends mainly on the character of the cement. If the cement is a hematite, the rock is red, if limonite, it is yellow. Many of the sandstones are gray or nearly white, and the reason is due to the cement which did not contain iron oxide.

SHALE is composed of extremely fine particles of weathered rocks, consisting mainly of sand, mica and feldspar. The colors vary extremely but usually they are gray. If iron oxide is present, the color is red or yellow. Other impurities may make the rock green or black.

LIMESTONE is an organic rock. Its origin is entirely different from that of sandstone. Instead of being made up of fragments of older rocks, the carbonate of lime or calcite has been separated from the sea water by living organisms and has been deposited on the ocean bed where it hardened into fine-grained rock. Many limestones contain the fossil remains of these organisms. The color of limestone is commonly gray. Occasionally brighter shades may be seen, such as, cream, tan and brown.

TRAVERTINE is a form of limestone deposited in large quantities by springs or rivers.

STALACTITES and STALAGMITES are a form of limestone slowly deposited by cold waters in caves, such as those abundant in America.

METAMORPHIC ROCKS

METAMORPHIC ROCKS are those that were formed by heat, pressure and chemical action on igneous and sedimentary rocks. Most of the metamorphic rocks which were formerly igneous rocks differ from those which were formerly sedimentary rocks in having a banded structure. Many of the metamorphic rocks, formed from sedimentary rocks which usually are of a banded structure, differ from those formed from igneous rocks in showing a crystalline structure. The following table clearly shows the usual origin of the commoner metamorphic rocks.

TABLE OF ORIGIN OF METAMORPHIC ROCKS

ORIGINAL IGNEOUS ROCK	RESULTING METAMORPHIC ROCK
Granite	Gneiss
Felsite or tuff	Slate or schist
Basalt or dolerite	Hornblende-schist, talc-schist-serpentine

ORIGINAL SEDIMENTARY ROCK	RESULTING METAMORPHIC ROCK
Limestone	Marble
Sandstone	Quartzite
Shale	Slate

Gneiss is a metamorphic granite composed of the same minerals as quartz and feldspar with either mica or hornblende or both. There are also gneisses formed from conglomerates or other sedimentary rocks. Usually the prominent feature of gneiss is a distinct banded structure. Sometimes this banded structure is not shown in hand-size specimens or even in large masses.

HORNBLENDE gneiss is a metamorphic rock formed from hornblende granite.

BIOTITE gneiss is the commonest of the metamorphic rocks and is usually light in color.

MICA-SCHIST differs from gneiss because of the absence of feldspar and is, therefore, composed mainly of quartz and mica. The mica is either muscovite or biotite and is the most abundant ingredient. This rock is arranged in parallel planes which produce the so-called shistose structure. If muscovite is the chief mineral, the color is usually gray, and if biotite predominates the color is black. Mica-schist is the second commonest of the metamorphic rocks.

PERIDOTITE, PYROXENITE, GABBRO, and DOLERITE are metamorphic rocks that were produced by the change of igneous rocks which were rich in iron and magnesium.

HORNBLENDE-SCHIST is composed mainly of an amphibole of one variety or another. The color is usually from dark green to black and the grain of the rock varies from fine to coarse. The coarse varieties of hornblende show blades or needles with distinct cleavage, visible to the naked eye. The finer-grained varieties of hornblende are less schistoze in structure, grading into a compact mass. The blades or needles can be seen only with the aid of a lens.

CHLORITE-SCHIST is composed chiefly of closely compacted minute scales of chlorite and is soft enough to be easily scratched with a tool. The color is usually a dull grayish-green.

GREENSTONE is a compact variety of chlorite-schist.

TALC-SCHIST is a schistose rock with a pearly luster and a greasy feel due to the abundance of talc. The talc may be in coarse foliated aggregates, or in fine scales. Because of the softness of the rock, it may be scratched with the finger nail.

STEATITE and soapstone are forms of impure compact talc-schist.

QUARTZITE is a metamorphosed sandstone. It is exceptionally hard and compact and breaks with a conchoidal or splintery fracture. Typical quartzite, composed of pure quartz rock, would naturally be a clear color, but many impurities consisting of minerals of microscopic sizes, impart various colors, such as, gray, pink, red and brown. If Mica be present in considerable quantities, the rock grades into a mica-schist.

JASPER is a form of opaque quartz and transmits no light. The color varies from a red to reddish brown.

FERRUGINOUS QUARTZ is a form of quartz that is sometimes densely filled with red or yellow iron oxides. The color of this rock is of various shades of yellow, red and brownish red.

SLATE is a soft and dense rock which breaks readily into thin plates. The mineral grains are similar to those of the parent rock which is shale and are so fine that they can not be distinguished with a lens. The color of slate is commonly shades of gray or black. It may also be red, green, brown and yellow.

IRON MINERALS

HEMATITE, LIMONITE, and MAGNETITE. The main reason for the small supply of native iron is due to the fact that iron "rusts" very easily. The term rust is a popular way of saying that iron readily combines with oxygen. Thus, the ores of the great iron mines of the world are largely oxides of iron. The particular minerals are hematite, limonite and magnitite.

SCALE OF HARDNESS

NAME OF ROCK	HARDNESS
Talc	1
Selenite	2
Calcite	3
Fluorite	4
Apatite	5
Microcline	6
Quartz	7
Topaz	8
Corundum	9
Diamond	10

PLATE 91.

Jefferson County, Ohio. Material, finely grained gray sand-stone discolored brown. Bi-face Hour-glass pattern decorated on each face. Perforation absent.

Plate actual size. FROM THE AUTHOR'S COLLECTION

ADOPTION OF SPECIAL MATERIALS FOR PARTICULAR TYPES

It may seem strange that certain groups of banner-stones are made of some particular kind of stone, and other groups are made of other varieties of stones. We may also observe that the blending forms of many of the groups are made of miscellaneous materials. What may seem still more strange is the fact that the highest developed designs, or types, of each of the many groups, in the majority of cases are made of a certain one kind of stone. But after we realize that certain materials that were used for the making of certain types had played an important part toward the ceremonial make-up of banner-stones in general, this complex situation no longer seems strange.

It is very apparent that the seven *Southern Primary Forms Nos. 1-2-3-4-5-6-8* were made by Indians who were not particular about the selection of materials to be used in their making. But as these simple forms, developed by gradual modifications into more beautifully designed blending forms that displayed finer workmanship, the Indians became more and more particular in selecting certain varieties of stones. Therefore, one is forced to believe that during the time miscellaneous materials were used for the making of these seven primary forms, and also for a great percentage of the blending forms that later developed, the materials carried no ceremonial significance whatever. The most common of the materials used for the making of these specimens was steatite, banded clay-stone, limestone, fine grained granite, variously colored quartzites and others, all of which are quite unattractive.

It is very evident that by the time the blending forms had developed into the highest specialized designs, the Indians had adopted more beautiful varieties of stones to add to their charm.

The adoption of special materials for the making of type specimens indicates that certain varieties of stones unquestionably symbolized

some secret ceremonial significance, probably sacred to these Indians. But what these meanings were, no one now will ever know. This is one of the writer's most prized conclusions. Although it may be regarded as a theory, it is based upon facts noted from observations. To demonstrate this complex situation the writer shall tabulate the various materials that were adopted for the making of the types of the many different groups.

For example: we shall start with ferruginous quartz. There are only four groups of banner-stones which decidedly show that this material was adopted for the making of the types. These are listed as follows:

FERRUGINOUS QUARTZ

Hour-glass	Type No. 6
Single-face Bottle	" " 8
Quartz Butterfly	" " 16
Bi-face Bottle	" " 29

It is interesting to know that the blending forms of the *Hour-glass Group* are made of many different varieties of stones. This same situation is also true to the *Quartz Butterfly* blending forms, although the greater percentage of them are made of variously colored quartz and quartzites. The blending forms of the *Single-face Bottle Group* are made of miscellaneous materials, while the blending forms of the *Bi-face Bottle Group* are generally made of quartz and quartzites of various colors.

Therefore, after we study the materials used during the evolution of these four groups, and find that ferruginous quartz was used exclusively for the making of the ultimate designs or types, we should be convinced that this particular stone meant much to the Indians.

The writer shall quote part of the contents of a letter received from Prof. J. E. Pearce*, on January 11, 1936, in which he advanced a very interesting theory of the importance that this material probably had. Prof. Pearce's theory is quoted as follows:

"Jasper and Chalcedony banner-stones seem to represent the Indians's worshipping attitude toward fire. If held up between the eye and a strong light these colored stones seem to possess flame on the inside, and I think this fact explains the use of such materials in the making of certain banner-stones."

*Pearce, J. E., Chairman of Anthropology, University of Texas, Austin, Texas.

Another material that was highly regarded and adopted by the prehistoric Indians for the making of certain ultimate designs of bannerstones was porphyry and other mottled or spotted granites. It seems that these varieties of granites because of their beauty were used even more extensively than ferruginous quartz. At least these stones were adopted for the making of no less than nine different types, while quartz was adopted for only four. The type specimens made of porphyry, and mottled or spotted granites are listed as follows:

SPOTTED GRANITES

Humped	Type No.	1
Triangular	" "	4
Triangular (dual-type)	" "	5
Saddle-face	" "	7
Notched Ovate (Lower Alleghany)	" "	15
Rectangular Barreled	" "	17
Wisconsin Winged	" "	18
Undrilled Wisconsin Winged (Fetish)	" "	19
Mississippi Valley Crescent	" "	21

Although many varieties of granites were used for the making of the blending forms of a number of these groups, the blending forms of the remaining groups were made from many different materials. Yet the type specimens of these particular groups are in the majority of cases made of porphyry and other mottled or spotted granites.

The materials used for the making of the *Saddle-face* type specimens, which are found in a rather large area, create quite a complex situation. Those found in the Middle and Upper Mississippi Valley Areas are most generally made of porphyry and other spotted granites, while those found in Indiana are made of both mottled or spotted granite and quartz materials. It is also not uncommon to note in this locality many that are made of an olive green quartzite. This complex situation is due perhaps to the varied fancies of the Indians in these two widely separated areas toward materials.

It is very plausible that certain villages, clans, or tribes in Indiana made these types of olive green quartz. Other villages, clans, or tribes of nearby sections, however, made these same patterns of granite and quartz, both of which are mottled or spotted varieties. There is also the possibility that

these two varieties of stone were adopted to signify different ceremonial meanings, and a single village or clan may have made this pattern of these stones for that reason.

A number of *Saddle-face* banner-stones made of olive green quartz have been found in Hancock and Adams counties, Illinois, near the Mississippi River. It is very plausible that these particular specimens were carried from Indiana to this locality. This belief is based upon the fact that the material from which these specimens are made, corresponds to those more abundantly found in Indiana.

Another group of banner-stones that creates quite an intricate problem as far as adopted material is concerned is the *Rectangular Barreled Type No. 17*. Apparently it is a complex situation very similar to the one just described concerning the *Saddle-face* types. Although the great majority of the type specimens of this group are made of spotted granites, occasionally patterns occur made of variously colored mottled quartzites. Just why these objects were made of a material other than spotted granite, one cannot say. It may again be another case of a change in the Indian's fancy toward materials. Perhaps the members of certain villages or small areas adopted quartz material for the making of the ultimate designs, instead of spotted granites. Specimens of this type made of quartz are far rarer than those made of spotted granites. Regardless of the fact, however, that the types of the *Saddle-face Group* and also the *Rectangular Barreled Group* were occasionally made of materials other than the spotted granites, there still remains the fact that this variety of stone was adopted for the making of the types of the previously listed remaining seven groups exclusively. It is very obvious these spotted materials carried some vital important ceremonial meaning similar to that of the ferruginous quartz, but probably of an entirely different nature.

The most commonly used material for the making of banner-stones was banded-slate. There are fourteen ultimate designs made of this particular stone, most of which are found in the banded-slate or Heart Area. Of this number there are six types that developed within this area from the *Heart Area Primary Form No. 7*. We may believe that banded-slate had also symbolized some important ceremonial meaning to the Indians who used this material so extensively. These are listed as follows:

BANDED-SLATE

Reel	Type	No.	10
Double Bitted Axe	"	"	11
Geniculate	"	"	13
Paneled	"	"	14
Knobbed Lunate	"	"	22
Curved Pick	"	"	23
Single Pronged Pick	"	"	24
Double Notched Butterfly	"	"	25
Undrilled Butterfly	"	"	26
Notched Ovate (Heart Area)	"	"	27
Double Crescent	"	"	28
Flutted Ball and Tubular	"	"	30
Tubular (round and oval)	"	"	31
Tubular (square, triangular, and single-face)	"	"	32

The *Shuttle Group* differs from others because of the fact that the ultimate designs are made of many varieties of stones. Specimens that comprise this group are very rare. The design of the blending forms and also the ultimate designs are extremely simple. Therefore, one may believe that these objects were never very popular and may be the reason why there were so few of them made. The Indians had probably discarded the design before any special material was adopted to add to the ceremonial significance of this group. Those the writer has come in contact with were made from ferruginous slate, limonite, black or gray granites, brown and light tan colored quartzites.

Only a small number of the *Concave Humped* and *Hinge-type* specimens have been found. Those which have been observed show that no particular stone was ceremonially adopted for their making.

The *Shield-shape*, and also *Notched Crescent*, type specimens, both of which abundantly occur within the New England Area, are usually made of various rocks, including plain slate, steatite, trap rock, and soapstone. The types made of miscellaneous materials are given as follows:

MISCELLANEOUS MATERIALS

Concave Humped	Type	No.	2
Shield-shape	"	"	3
Hinge-type	"	"	9
Shuttle	"	"	12
Notched Crescent	"	"	20

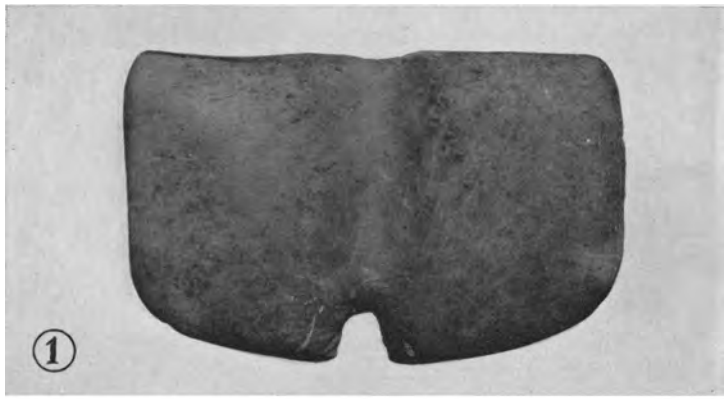


PLATE 92.

No. 1—Notched Crescent banner-stone characteristic of the New England Area, discovered by William A. Ritchie during excavations of an old camp-site on the Channing Robinson site at Brewerton, Onondago County, New York, in 1937 and 1938. Material, gray clay-stone. Plate 3/4 actual size.

No. 2 A view of Trench 6. The above banner-stone is shown in-situ, around which is placed a white circle. This site has been named the Laurentian aspect. A detailed report will probably appear in 1939.

ROCHESTER MUSEUM OF ARTS AND SCIENCES, ROCHESTER, NEW YORK

BANNER-STONES FROM INDIAN KNOLL, KENTUCKY

During the explorations carried out by Clarence B. Moore along part of Green River and particularly at the "Indian Knoll" site in the fall and winter of 1915 and 1916, many interesting discoveries were made. The "Indian Knoll" site consisted of a series of graves located on the high ground on the north bank of Green River in Ohio County, Kentucky.

The most interesting discoveries made were the findings of banner-stones and hooked implements of antler in many of the graves. It is a very rare occurrence to find banner-stones in either mounds or graves anywhere. The association of these objects of stone with the hooked implements caused much discussion concerning their uses. Therefore, these discoveries were of great scientific value.

Some 296 burials were opened and as nearly as could be determined from the skeletal material taken out the contents of the graves were as follows: of adults, 183; of adolescents, 23; of infants and children, 92.

From thirty-one of the burials were taken a total of 22 1/2 banner-stones, many of which were broken or "killed," 28 of the hooked implements of antler, and 11 tubular shaped objects of antler. The tubular objects were made from the base of the horn. The hooked implements of antler were made from the slender prongs and varied in length from 6.3 to 9.45 inches.

In the journal published by the Academy of Natural Sciences, *Some Aboriginal Sites on Green River, Kentucky*, volume XVI, Prof. Moore described these burials and advanced a very seemingly worthy theory for the uses of these objects in conjunction with one another. These interesting specimens including those of stone and those of antler were also illustrated in this publication. By special permission of the Academy of Natural Sciences the writer shall quote a number of paragraphs from Moore's text, describing these objects, and the theory he advanced for their supposed uses.

Prof. Clarence B. Moore is quoted as follows:

"Along part of Green River, Ky., and particularly in "The Indian Knoll," Ohio County, were found by us objects of antler, hooked at one end and having a cavity in the other end, in which sometimes was asphalt, used for fastening something introduced into the cavity. These objects, all that were found by us except eight too fragmentary for restoration, are shown in Figs. 4, 10, 12, 13.

"Usually in intimate association with these hooked implements of antler were found, in nearly every instance where the hooked implements were present, as exactly described later in this report, other objects, some of antler (most of which were made from the base of the horn), some of stone.

"These objects of stone and of antler evidently were employed for the same purpose, sometimes those of stone being with the hooked implements, as were sometimes those of antler. Each has a longitudinal perforation of considerable diameter. The objects of stone, which would be called banner-stones and regarded as belonging to the ornamental or ceremonial class were their association at this place unknown, are oblong in outline or of some similar form, a few being of the winged variety. They are carved with the utmost care, as a rule almost flat on one side, somewhat convex on the other, and having on the convex side a slight ridge extending longitudinally along the median line. The material for their making was evidently carefully selected, some being of stone rich in coloring, including quartz, flint, chalcedony, and a silicious material closely resembling jade. A few of the objects of antler have the rough, original surface and perhaps were unfinished.

"These objects of antler and of stone, which, as we have said, evidently were used for the same purpose, the hooks being with one or with the other class indiscriminately, are shown in Figs. 3, 4, 9, and Plates IX, X, XI, which include illustrations of all of both classes found by us, some of the objects of stone, found broken ceremonially, having been restored.

"Judging that some use in common could be found for the hooked implements and the objects of antler and of stone, it seemed to us at first that the correct solution of the problem might be that respectively they were netting needles and objects used with them for spacing the meshes of the nets, variously called sizers, spacers, mesh-measurers, mesh-gauges, mesh-boards, mesh-blocks.

"Hereafter in this report, for convenience and not because we are fully convinced they are such, we shall designate the hooked implements as needles and the objects found with them as sizers.

"We were aware that we had to face two probable objections in connection with our determination, namely, the orifices in the ends of the needles, and the perforations in the sizers, neither of which seem absolutely necessary for the use to which the needles and sizers were assigned.

"The hollow part in the needles we considered to be a receptacle for some adjunct, perhaps purely decorative; and the perforation in the sizers to have been made for the

reception of a handle, knowing that the Eskimo of Alaska have handles on their sizers, which, however, are of bone and all of one piece. Moreover, we have found by experiment that a handle affixed to one of our sizers is of assistance in net-making with it, and, in addition, would afford a means of suspension much preferable to running a cord through the perforation and bringing it up along a side, since, this would interfere with the work for which the sizer was intended."

The cultural material discovered by Prof. Moore is now exhibited in the Museum of the American Indian, Heye Foundation. This museum has kindly furnished the photographs of the banner-stones which are now illustrated in Plate 96 and 97. The data accompanying these plates as far as material from which they are made is concerned, and a description of the burials from which they were taken, was obtained from *Some Aboriginal Sites on Green River, Kentucky*. The writer has classified these objects by the *A, B, C system*, giving, in addition, the name of the type group to which each specimen belongs.

The hypothesis advanced by Moore for the supposed uses of these objects appeared to be a very logical one. It is very possible that the hooked implements of antler were used as netting needles for the making of fishing nets. It is also very possible that the tubular shaped objects of antler were used as mesh-spacers.

Since Moore made his important discoveries much has been learned about banner-stones. Yet after twenty-three years the mystery concerning the association of the banner-stones and the hooked implements, and the question whether or not these objects were used in conjunction with one another in making fishing nets, still remains an unsolved problem. Nevertheless, the knowledge obtained during this time concerning banner-stones must be considered before we can adopt the theory that those found at the "Indian Knoll" site were used as mesh-spacers.

At this time we can note the origin of these objects, the evolution and the development of the differently designed patterns, and the adoption of special materials for the making of particular types.

The differently designed patterns can now be classified systematically. Previously a classification scheme was not definitely established. Therefore, by noting these facts one is now able at least to study the banner-stones from the "Indian Knoll" site more intelligently than when they were discovered. These particular specimens can be classified by their

construction in the type groups to which they belong. By noting the different materials from which these objects were made one can also classify them by the *A, B, C system*. Thus one is able to know fairly well in what phase of the Banner-stone Era these specimens were made.

After making these observations, the writer discovered that all the banner-stones found in the burials by Moore, are blending forms, and were probably made in an early phase of the Banner-stone Era. Specimen No. 11 in Plate 96, a surface find, was made during a later cultural manifestation.

The netting needles and netting sizers or mesh-spacers of antler are illustrated in Plates 93 and 94. These two pictures are reproductions of two double-page spreads copied from the previously mentioned journal.

It may seem unnecessary to discredit in the fullest extent the theory advanced by Prof. Moore, that the banner-stones he discovered were used as mesh-spacers. His monumental achievements in the field of archaeology demand much respect. Therefore, any points in favor of his theory

PLATE 93.

This plate shows a double page spread, copied from *Some Aboriginal Sites Along Green River, Kentucky*, by Clarence B. Moore, showing a group of "netting needles," of antler which were undoubtedly used for the making of fishing nets.

should be considered. It is highly probable that some of the banner-stones found at the "Indian Knoll" site which are suitably shaped, were used for this purpose. This point seems to be the only one in favor of his theory. Nevertheless, there still is no reason for anyone to believe that all banner-stones, or even those suitably shaped, were made expressly for this purpose. Many other implements which the Indians used might have served the purpose just as well.

Let us assume that the *Triangular* patterns were suitably shaped and were used as mesh-spacers even though they were ceremonial symbols. We must realize that these objects were used ceremonially only on certain occasions. We may believe that at the termination of the ceremonies these objects were probably worn ornamentally. Therefore, it should make but little difference if one considers that these patterns were used as mesh-spacers or were used ornamentally during the intervals between ceremonies. Probably the Indians who possessed these objects believed that

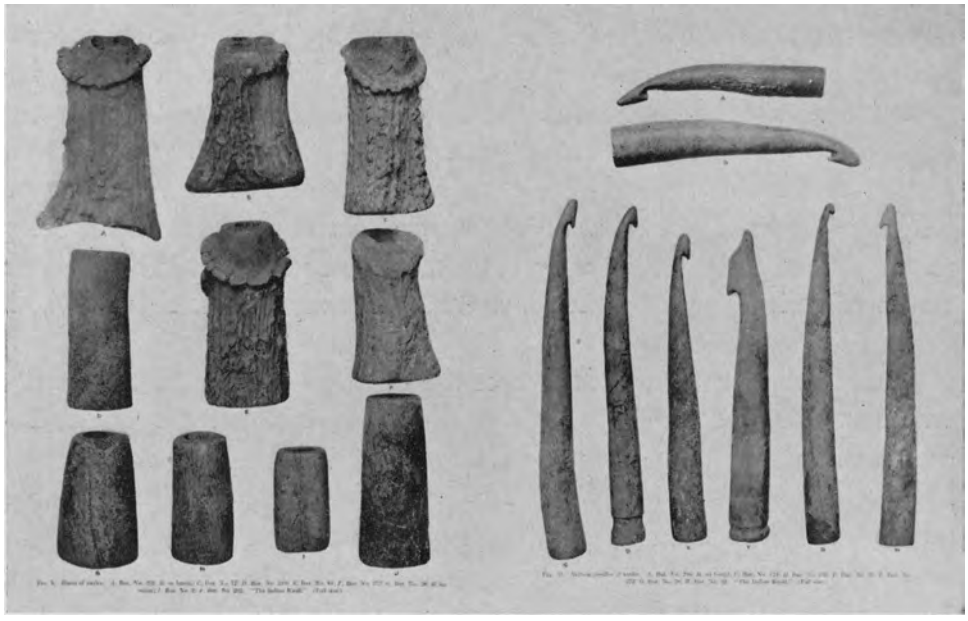


PLATE 94.

This plate shows a double page spread copied from *Some Aboriginal Sites Along Green River, Kentucky*, by Clarence B. Moore, showing a group of "mesh-spacers," of antler, finished and unfinished. A group of netting needles is also shown.

fishing nets made with these ceremonial symbols were magically and supernaturally favored, and hence they would be able to catch more fish.

Because at the present time so many interesting facts are known concerning the banner-stones, it is only fair that we should consider them. It seems rather absurd to believe that these objects were made for an ordinary use such as mesh-spacers, and there are a number of reasons why we may reject the theory that they were so used. The writer shall express his views on this subject concerning this find and shall site some of these discreditable reasons. These reasons are enumerated as follows:

First, the mere fact that so many of the banner-stones found at the "Indian Knoll" site were broken is convincing proof that they were ceremonially "killed." The custom of "killing" was usually practiced mainly on objects that were of some ceremonial significance and not on ordinary implements or utility objects such as mesh-spacers.

Second, there is no doubting that the hooked implements of antler were used as netting needles. It is also very probable that the tubular objects of antler were used as mesh-spacers. But, if the banner-stones are to be regarded as mesh-spacers, one is confronted with a very important question: their difference in shape. If mesh-spacers were made of stone, one would wonder why they were not made round in cross-section similar to those made of antler. We can, however, find a reason why those made of antler are round in cross-section. The reason being that the horn from which they were made is round. But there is no reason for making mesh-spacers of stone in the shape of the objects which we call *banner-stones.*

Third, let us note the designs of the banner-stones found at this site which could have possibly been used as mesh-spacers. Upon careful consideration, we then discover that only the *Triangular* patterns could have been used for this purpose. The *Saddle-face* patterns with the knobs on each end, the *Hour-glass* patterns with concave side edges, and the *Butterfly* patterns with expanding wings are constructed in such a manner that it would have been utterly impossible to use them for this purpose.

Fourth, it is very obvious that it was a far easier task to make mesh-spacers of wood or of antler than from stone, and furthermore these materials would have served the purpose just as well. When we consider

the tubular objects of antler as mesh-spacers, we may note this fact.

Fifth, let us now assume that the banner-stones and the tubular objects of antler were both used as mesh-spacers, even though the banner-stones appear unsuitably shaped for this purpose. Let us assume further that a breaking or "killing" ceremony took place during the burial ceremonies even though these objects were mere implements. We are now confronted with an important question: Why were many of the banner-stones "killed" and not the netting needles? Possibly, some of the netting needles were broken. But whether or not they were ceremonially broken or were broken by pressure from being in the ground is difficult to say.

Sixth, if we consider the banner-stones from the "Indian Knoll" site as mesh-spacers we are forced to regard all these objects of stone which we call *banner-stones* as mere implements. This idea seems utterly absurd. We must realize that these objects of stone consist of many differently designed patterns, patterns that could never have been used for that purpose. It also seems unlikely that the people of the entire Banner-stone Area (the eastern half of the United States) were makers of fishing nets.

PLATE 95.

Clarke Point Site. Block 2, Trench 3, Burial No. 6, Banner-stone No. 3, Plate 2.

The banner-stone and netting-needle found in this burial are shown "in-situ" in this picture. Further description of this find is given on page 200.

EXPLANATION OF PLATE 96

Banner-stones found by Clarence B. Moore in a series of graves at "The Indian Knoll" site, located on the north bank of Green River near the town of Paradise in Ohio County, Kentucky. Number seven, however, was found at the Austin Place a short distance up the river from this site. The burial and plate numbers are taken from the Journal of the Academy of Natural Sciences by Clarence B. Moore. The specimens illustrated are classified by the A, B, C, system. The type groups to which each pattern belongs is given in the following data, specimen No. 11, found on the surface, is a highly developed type, and was made during a later cultural manifestation than those found in the burials by Moore. This fact can be noted by a comparison of specimen No. 11 with No. 10.

CLASS B AND C SPECIMENS

Plate 1/2 actual size

No. 1—Material, quartz. H. Plate XI. Burial No. 202. Triangular Group. Class B specimen.

No. 2—Material, limestone. A. Plate X. Burial No. 20. Triangular Group. Class B specimen.

No. 3—Material, banded clay-stone. F. Plate XI. Burial No. 105. Hour-glass Group. Class B specimen.

No. 4—Material, granite. D. Plate X. Burial No. 115. Saddle-face Group. Class B specimen.

No. 5—Material, limestone. E. Plate XI. Burial No. 211. Hour-glass Group. Class B specimen.

No. 6—Material, silicious rock. I. Plate X. Burial No. 67. Saddle-face Group. Class B specimen.

No. 7—Material, limestone. A. Plate IX. Burial No. 2. Hour-glass Group. Class B specimen.

No. 8—Material, coarsely crystalline rock. H. Plate X. Burial No. 87. Saddle-face Group. Class B specimen.

No. 9—Material, chalcedony. C. Plate X. Burial No. 163. Hour-glass Group. Class C specimen.

No. 10—Material, ferruginous quartz. B. Plate XI. Burial No. 251. Quartz Butterfly Group. Class B specimen.

No. 11—Material, ferruginous quartz. Plate XII. Surface find. Quartz Butterfly Group. Class C specimen.

No. 12—Material, clay-stone. D. Plate XI. Burial No. 93. Hinge-type Group. Class B specimen.

Museum of the American Indian, Heye Foundation Collection, New York, N. Y.

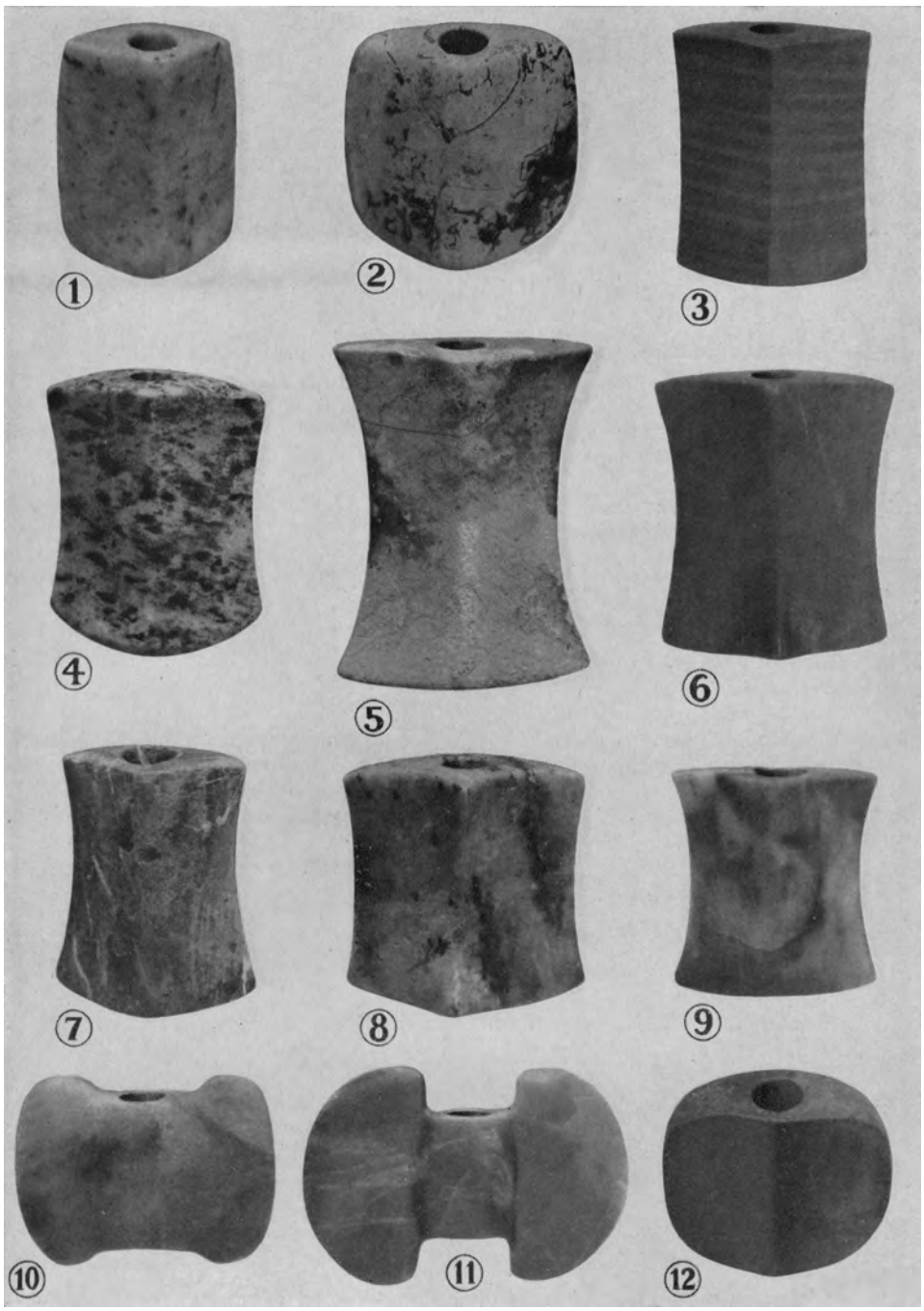


PLATE 96

EXPLANATION OF PLATE 97

Banner-stones found by Clarence B. Moore in a series of graves at "The Indian Knoll" site, located on the north bank of Green River near the town of Paradise in Ohio County, Kentucky. The burial and plate numbers are taken from the Journal of the Academy of Natural Sciences by Clarence B. Moore. The specimens illustrated are classified by the A, B, C system. The type groups to which each pattern belongs is given in the following data.

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—Material, limestone. D. Plate 1X. Burial No. 34. Saddle-face Group. Class B specimen.

No. 2—Material, ferruginous quartz. P. Plate 1X. Burial No. 99. Quartz Butterfly Group. Class B specimen.

No. 3—Material, silicious rock resembling jade. G. Plate X1. Burial No. 95. Triangular Group. Class B specimen.

No. 4—Material, clay-stone. C. Plate X1. Burial No. 37. Hour-glass Group. Class B specimen.

No. 5—Material, gneiss. F. Plate X. Burial No. 259. Hour-glass Group. Class B specimen.

No. 6—Material, gabbro. I. Plate X1. Burial No. 236. Saddle-face Group. Class B specimen.

No. 7—Material, quartz. E. Plate X. Burial No. 82. Hour-glass Group. Class B specimen.

No. 8—Material, silicious rock resembling jade. G. Plate X. Burial No. 216. Hour-glass Group. Class B specimen.

No. 9—Material, quartz. A. Plate X1. Burial No. 47. Hour-glass Group. Class B specimen.

No. 10—Material, banded clay-stone. B. Plate X. Burial No. 161. Hour-glass Group. Class B specimen.

No. 11—Material, fine grained sand-stone. Figure No. 15. Burial No. 72. This specimen is 1/2 of a Triangular pattern which was broken parallel with the perforation. The broken area was ground down, and the one end shows evidence of incompleted drilling. Class B specimen.

No. 12—Material, ferruginous fossiliferous limestone. E. Plate 1X. Burial No. 45. Triangular Group. Class B specimen.

Museum of the American Indian, Heye Foundation Collection, New York, N. Y.

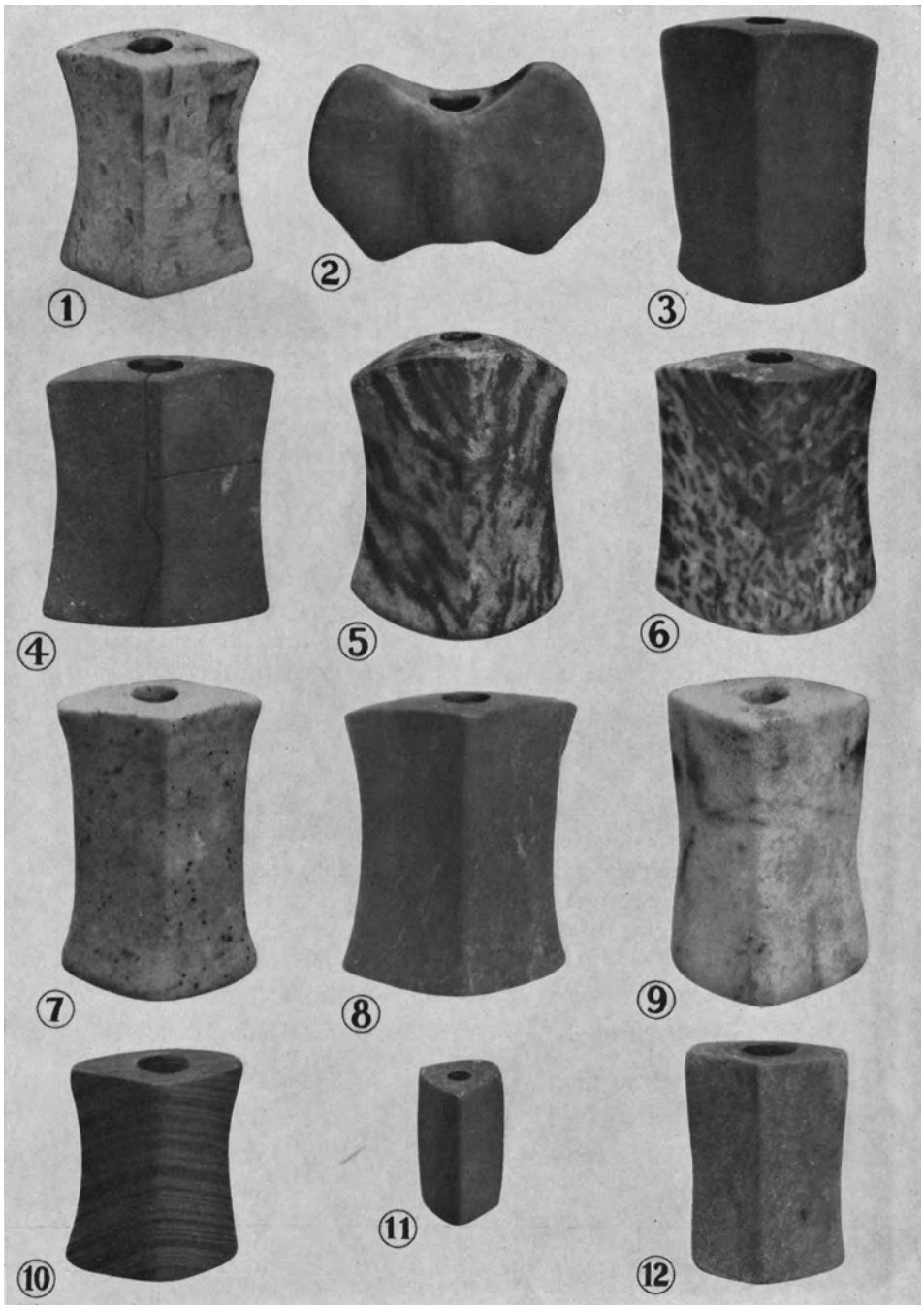


PLATE 97

"March 3, 1938

Dear Mr. Knoblock:

You will find enclosed a couple of photographs showing one of the net spacer bannerstones 'in situ,' dug up by Mr. Guernsey near Clarksville across the river from Louisville. He has the following remarks to make in connection with these:

"In respect to 'in situ' photographs of banner-stones, I may as well confess that I have only one such that is of sufficient importance to send to Mr. Knoblock, and the same is enclosed herewith. He is of course welcome to use it if he wishes. It is possible, however, that he would prefer to borrow the original film; if so, I'll be glad to send it to him. As you perhaps remember, our Clarksville excavation was undertaken without our having had any protection against night-invasions by relic-hunters and such-like predatators—hence we tried to clean up each burial soon after it was uncovered. In fact, it was generally necessary, because of visitors we couldn't very well manage, to 'snitch' the burial accompaniments while onlookers were present; otherwise we should have had everything messed up on our return next morning.

"The photographic prints aforesaid illustrate quite faithfully the *usual* condition of the Ohio Falls burials, for which condition many reasons have contributed. We found the 'net-spacer' bannerstone in diverse positions, as you will remember, including one group of three within the pelvic basin of a female in Block 3, Elrod Site. These must have been very carefully placed upon the abdomen, I take it, to have assumed the position in which they were found. The fact is that I believe most of the Clarksville burials of the 'Indian Knoll' phase to have been within skin or fabric wrappings.

Hoping these will be of some interest to you, I am,

Sincerely yours,

(Signed) ELI LILLY."

The above reproduced letter was received by the author from Eli Lilly. The contents gives a thorough description of the burial which is illustrated in Plate 95.

BANNER-STONES FROM RED PAINT BURIALS FOUND NEAR THE ILLINOIS RIVER

The cultural material to be described in this article was taken from two mounds on two occasions; therefore, the objects discovered on each occasion will be described separately.

This site is located on the high bluff overlooking the Illinois River about ten miles east of the town of Versailles in Cooperstown Township, Brown County, Illinois. At this location the bluff is about one-half mile away from the river.

This bluff extends along the river for many miles north and south of this site. Upon the rim of this bluff are many mounds. The flat bottom land that lies between the river and the bluff varies in width from one-half to one mile. During the high water stages of the river, this bottom land occasionally becomes flooded.

THE FIRST DISCOVERY

In the fall of 1933 the two Hemphill brothers unearthened many unusually rare relics from a mound on their land. It was learned from the information obtained that some thirty-five years ago this mound was large and quite high. The original elevation of this mound was greatly reduced during the many years it was plowed over for cultivation. It was also worn down by erosion, and at the time of excavation only a slight trace of it remained.

During the fall plowing of this particular season, some large limestone slabs were struck by the plow at this site. Some of the stone slabs were removed thereby exposing fragments of bone. It was realized that the bones were from a burial.

The two Hemphill brothers decided to dig in this burial, believing that, possibly, something of value could be found. As a result of their efforts revealed many interesting objects. The skeletons of two indi-

(*Continued on Page 204*)

EXPLANATION OF PLATE 98

RED OCHER CULTURAL MATERIAL

The specimens illustrated in this plate were taken from a mound on the high bluff overlooking the Illinois River, about 10 miles east of the town of Versailles, in Coopers-town Township, Brown County, Illinois. The quantity of red paint encountered in the burial suggests the "Red Ocher Culture" complex.

Plate 1/3 actual size

No. 1—Wisconsin Winged banner-stone, Type No. 18. The porphyry material from which this specimen is made is exceptionally beautiful, and the workmanship displayed is superb. Size 3 5/8 x 2 3/4 inches.
The picture on the left shows the face which has no lime deposit.
The picture on the right shows the face which is heavily incrusted with a lime deposit.

No. 2—Triangular banner-stone, Type No. 4. The material from which this specimen is made is black and white spotted granite, exceptionally beautiful, and the workmanship displayed is superb. Size 4 x 2 1/2 inches.
The picture on the left shows the face which has no lime deposit.
The picture on the right shows the back which is heavily incrusted with a lime deposit.

No. 3—Grooved axe. Material, black and white spotted granite. The workmanship on this axe is exceptionally fine. Size 4 1/2 x 2 3/8 inches.
The picture on the left is the side which has no lime deposit.
The picture on the right shows the side which is heavily incrusted with a lime deposit.

No. 4—Notched white flint spearhead, showing unusually fine chipping. Length 9 inches.
The above picture shows the side which has but little lime deposit.
The lower picture shows the side which is heavily incrusted with a lime deposit.

No. 5—Large stone beads. Material (probably calcite). Some of these beads show disintegration.

No. 6—Stone core from the drilling of a pipe bowl.

No. 7—Large quartz perforated tablet. The material from which this specimen is made is exceptionally beautiful, and the workmanship is superb. The light colored areas are translucent. The side not shown is heavily incrusted with a lime deposit. Size 5 3/4 x 3 1/8 inches.

No. 8—Large quartz perforated tablet. The material from which this specimen is made is the same as the one shown under No. 7. The workmanship is superb. The side not shown is heavily incrusted with a lime deposit. Size 5 1/2 x 2 3/4 inches.

No. 9—Copper awl, length 13 1/2 inches.

From the collection of Claude U. Stone, Peoria, Illinois

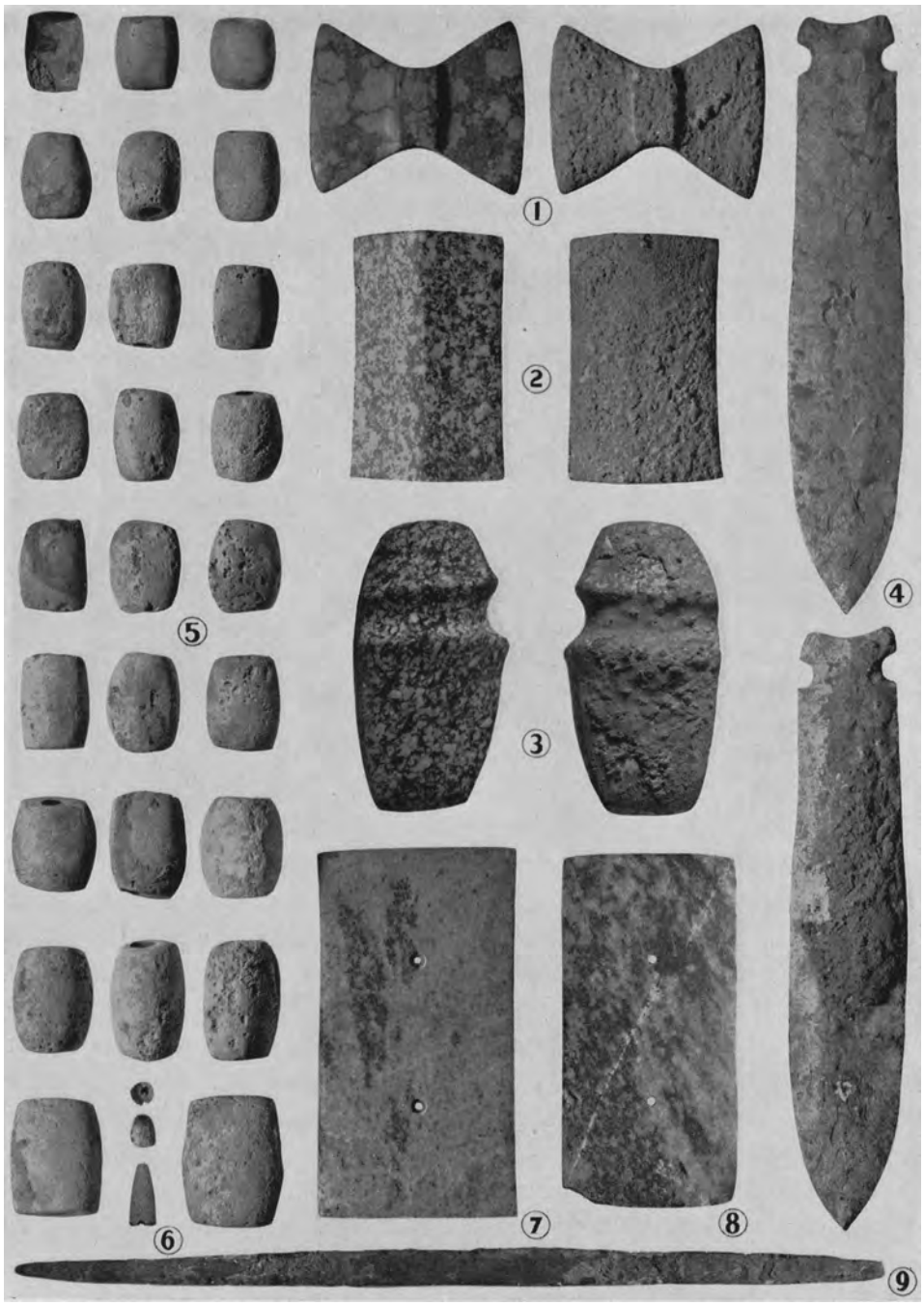


PLATE 98

viduals were uncovered; both were in an extended position. One of the skeletons was described as being about seven feet in length, but this description, indeed, may be an exaggeration. The ground surrounding the skeletal remains and the relics, was described as being red in color. It is very obvious that the red color of the earth suggests the "Red Ocher Culture" of which very little is known.

It is to be regretted that this mound was ransacked because it was so rich in archaeological material from which so much could have been learned. If, however, this mound had been carefully excavated in a scientific manner, a more accurate record could have been taken including photographs of the burials with the relics in-situ.

All the material discovered during this digging is assembled into one group, in Plate 98, and is listed as follows:

1—Wisconsin Winged banner-stone, Type No. 18.
1—Triangular banner-stone, Type No. 4
1—Grooved axe of black and white spotted granite.
2—Large quartz perforated tablets, rectangular in shape.
1—Copper awl, 13½ inches in length.
1—Notched flint spearhead, 9 inches in length.
26—Large stone beads (probably calcite).
1—Core from the drilling of a pipe bowl.
A number of copper beads.

The most interesting feature of this find was the presence of the two banner-stones. Apparently this is the first time that such patterns have been found in a mound in the state of Illinois. The writer at this time is not aware of another instance. Both of these objects are extremely highly developed, and the design of each is entirely different. One specimen may be classified as a *Wisconsin Winged* pattern and is made of exceptionally beautiful porphyry material; the other one is a *Triangular* pattern and is made of black and white spotted granite. The workmanship displayed on both of these specimens is the finest so far observed.

The presence of the two banner-stones in these burials proves that the Indians of the "Red Ocher Culture" had used these objects. Yet it seems rather strange that two differently designed patterns would be associated together in a single mound.

From the fact that these specimens are highly specialized designs, one may be led to believe that they were made in a later cultural manifestation. Thus by these objects some light is thrown upon the age of this mound.

The two large perforated tablets, or gorgets, are exceptionally interesting because of the exquisite workmanship displayed in their making. Both of these specimens were made of the same kind of rock, a translucent quartz material, light bluish gray in color, with opaque areas streaked and blotched with black. These objects are rectangular in shape and have two small perforations which were made for suspension. Their thickness is a trifle less than one-fourth inch. The most unusual feature about these superb gorgets is the highly polished surfaces, which are somewhat comparable to that of a china plate.

The majority of the relics taken from these burials were heavily incrusted on one side with a lime deposit. On some of the specimens this crust in places is one-fourth inch thick. This lime deposit can easily be accounted for, being formed from the limestone slabs which were placed over the burials. As these limestone slabs disintegrated the lime and minerals seeped down through the ground and were deposited upon the one side of the objects below. During the course of time this substance hardened. Two pictures of a number of these incrusted specimens are illustrated in Plate 98; one picture shows the side not incrusted; the other shows the side incrusted.

THE SECOND DISCOVERY

In the spring of 1938 the second discovery was made near the same site. The two brothers proceeded to do some more digging, in another mound nearby, and again other burials were uncovered and many relics were taken out.

A short time later the writer was passing through this section of the country and was told that a number of very fine relics were recently discovered at this site. He hastened there to make an investigation, and found that the relics consisted of many very fine and rare specimens, all of which were purchased from the finders. This material proved to be

almost as interesting as the material found during the first excavations, although no banner-stones were discovered. A list of these objects follows:

1—Large quartz perforated tablet, rectangular in shape.
1—Stone gorget (probably calcite), rectangular in shape.
45—Large heads (probably calcite).
1—Copper rat-tail spearhead, 9 1/2 inches in length.
2—Copper awls, 4 1/2 inches and 6 5/8 inches in length.
120—Copper beads, graduated sizes.
2—Antler objects, each perforated with a large hole; (use unknown).
1—Unfinished plummet of granite.
A number of perforated rodent teeth (probably squirrel).
1—Round jet trade bead, 7/16 of an inch in diameter.

All of the above listed specimens were taken from two burials. The ground surrounding the two skeletons and the relics, was red in color similar to the ground surrounding the burials uncovered during the first excavations. The large stone beads and stone gorgets were heavily incrusted on one side with a lime deposit and were also covered with a heavy deposit of the powdery red paint. This paint, in reality, is probably nothing more than pulverized red hematite.

It is very apparent that this red paint was in powder form and was sprinkled over the bodies. The graduated stone beads which were in place around the neck of one skeleton showed that the small sized beads were on the under-side and the large beads had lain upon the chest of the body. The holes in the small beads were filled with a yellow clay; while the holes in the larger beads, upon which were sprinkled the red pulverized paint, were entirely filled with this substance. A tablespoon full of this red powder was removed from about twenty of these large beads.

The large perforated tablet that was found in one of the burials was made in the same rectangular shape, and of the same kind of quartz material as those found during the first excavations. The size of this specimen is six and one-eighth by two and seven-eighths inches and three-sixteenths of an inch in thickness. A picture of this superb object is shown on page 268.

The copper-beads and the rat-tail spearhead were made of native copper, which was probably secured from the upper Michigan Peninsula. These beads were of graduated sizes, ranging from one-fourth inch to three-fourths inch in diameter. They show that this metal was ham-

mered into bars and then rolled into the shape of beads. A picture of the copper rat-tail spearhead is shown in Plate 99.

Considerable information concerning this mound was gathered during the writer's visit to this site. It was learned that the skeletons were placed at the very base of the mound. It is very probable that the bodies were laid upon the ground on a high point of the bluff, the articles of adornment were carefully arranged, and very obviously the red paint in powder form was heavily sprinkled over the bodies. The bodies were then covered with earth and the limestone slabs to form the mound.

Dr. Fay-Copper Cole and Dr. Thorne Deuel in their book *Rediscovering Illinois* have described the Red Ocher Cultural Complex from this area, and have also shown a cross-sectional drawing of the construction of one of these mounds in Fig. 19 on page 93.

The writer described this newly acquired material in a letter to W. C. McKern, curator of the Milwaukee Public Museum. Apparently he became highly enthusiastic and was particularly pleased to learn of the presence of the rat-tail spearhead in a "Red Paint Burial". Excerpts from Prof. McKern's letter are quoted as follows:

"July 22, 1938

Dear Mr. Knoblock:

In regard to that very productive burial you describe in your letter, someone should keep a complete record, photographic and otherwise, of the find. Such associations are vastly important to archaeological students, as you know. I assume that you or others down there have taken care of this or are engaged in doing so. It seems to have been a truly remarkable find. I believe that the most remarkable of the specimens, from the standpoint of association, is the rat-tail copper spear. I say this because I do not know of a single authentic instance west of New York where copper implements of that type have actually been encountered with burials. We have a theory that a certain group of copper implements, including the rat-tail spears and knives, are of relatively ancient origin. They show a lot of chemical erosion in comparison to our other copper specimens, and they have been stratigraphically found near the bottom of the pile in New York. On the other hand, some of the other objects in with this burial suggest later cultural manifestations. Of course it is barely possible that the spearpoint was not made by the Indians who placed it in the burial; it may have been picked up and retained as a sacred object or spirit stone. In any case, the find is important. The quantity of red paint encountered with the burial suggest the "Red Paint Culture" reported by Cole and Deuel, of which very little is actually known.

(*Signed*) W. C. McKERN"

PLATE 99.
Copper rat-tail spearhead discovered in the "Red Paint Burial," described in the accompanying text. A thorough description of the possible antiquity and origin of this specimen is given by Prof. W. C. McKern on page 207.
Plate 1/2 actual size. FROM THE AUTHOR'S COLLECTION

The most interesting discovery made at this site was the finding of an early trade bead of jet, seven-sixteenths of an inch in diameter. The farmers who did the excavating informed the writer that this black glass bead was taken from one of the burials. If this be true, there were probably many more of these beads in the burial but were thrown out during the careless digging.

Unfortunately, this bead was not seen in-situ in direct association with the material found during this excavation, which corresponds to the material found during the first excavation, which includes the two banner-stones. Consequently any relationship is questionable. In all probability this bead occurred in this mound, but no one can guarantee that it did.

This is the greatest trouble with excavation jobs conducted by untrained men. The demonstration of the association of this bead with banner-stones would have been worth more than all of the material discovered. It would have proved that banner-stones were used up to a comparatively recent time. A picture of this seemingly insignificant but important bead is shown in Plate 100.

PLATE 100.
This picture shows two views of the black glass trade bead, supposedly discovered in the "Red Paint Burial," described in the accompanying text.
Plate actual size. FROM THE AUTHOR'S COLLECTION

After conferring by correspondence with Prof. Glenn A. Black, concerning this discovery, the writer was informed regarding the antiquity of the bead. Excerpts from Prof. Black's letter are quoted as follows:

"September 30, 1938

Dear Mr. Knoblock:

This type of bead is rather common in the areas where trade beads are found. It is of Venetian origin as are most of the glass beads used by the French, English and Spanish Traders. This particular bead was made of a solid rod of black glass, as distinguished from other types of beads which were made of hollow canes of glass. With the rod of glass heated to the consistency of putty or hot wax the workman spun the glass around a rapidly revolving spindle or rod of metal. When the bead reached the desired size the rod was broken from the bead. With removal from the spindle the bead was completed even to the perforation. Examination of this bead under a glass reveals the spiral "grain" created by the whirling motion as well as the small projection where the glass rod was broken from the bead.

Since the 14th Century, if not before, the Venetians have been making glass beads for trade throughout the world. As indicated above, these beads were traded by men of all nationality and where ever there was a demand for such a commodity. Also, the Venetian workmen were in demand in other countries and established glass houses in England, France, and even in America where a group set up a house for the manufacture of beads at Jamestown. As these men undoubtedly continued to make beads in the Venetian manner regardless of the country in which they were working it is obvious that it is quite impossible to be sure that any particular bead was actually made in Venice or rather, Italy. Added to this is the fact that beads are still being made in Italy which could not possibly be distinguished from those found on many of our early historic Indian sites. I have sample cards of modern beads which have been quite helpful in identifying old beads.

Beads duplicating yours have been found at the site of Fort St. Joseph (near Niles, Michigan) established about 1690, the site of the Miami Post (Fort Wayne, Indiana) established about 1712, Post Ouiatanon (Lafayette, Indiana) as well as in Alabama, Georgia, Louisiana, and practically all regions where trade beads are found.

If this bead was found in the same mound as the gorgets, banner-stones, axes, copper rod, and other objects illustrated in the proof sheet sent me then I would say without hesitation that the glass bead was with a burial which had been placed intrusive into the mound. Such intrusive burials are common in mounds and only by expert observation is it possible to determine the true nature of such a burial. Even then, the grave earth is sometimes so homogeneous with the mound earth that they almost defy detection. I would be very cautious and conservative in assigning this bead to the same period as the other objects illustrated. I doubt very much if the glass bead is older than the late sixteen hundreds and it may be, of course, much more recent.

Sincerely yours,

(*Signed*) GLENN A. BLACK"

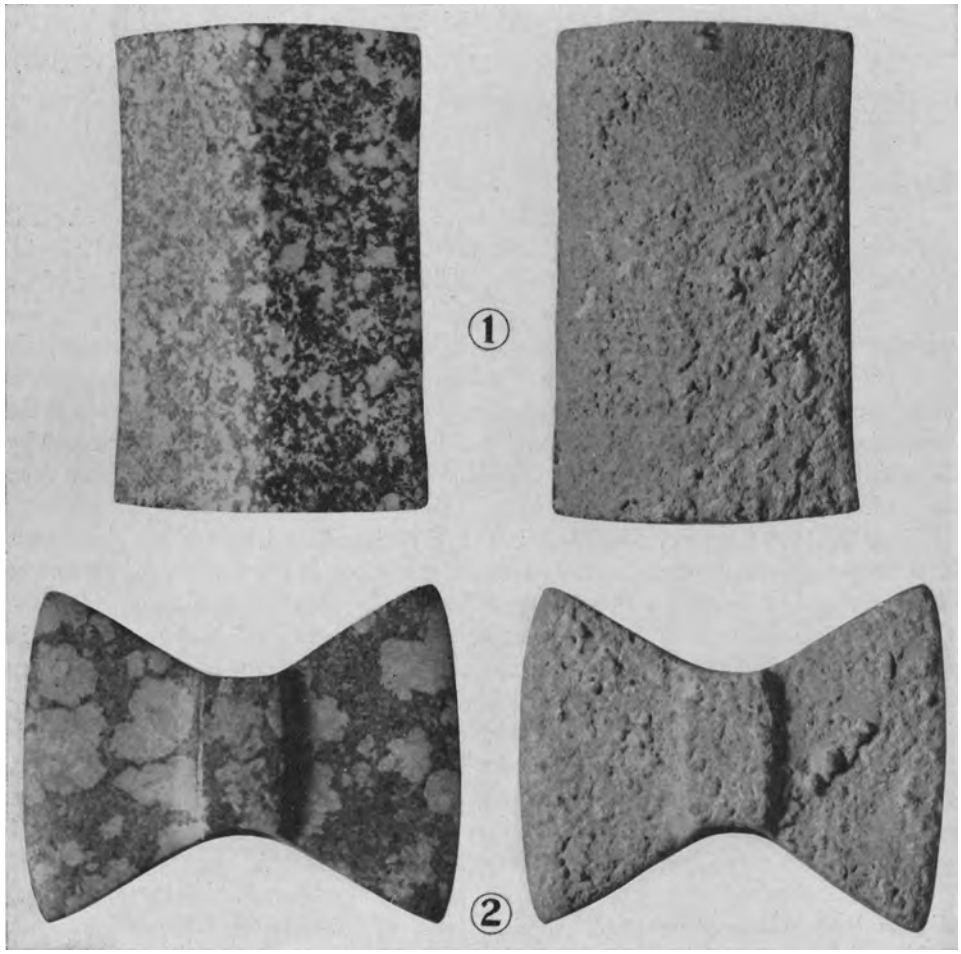


PLATE 101.

This plate illustrates the two banner-stones that were discovered in the "Red Paint Burial," previously described. Because these two specimens appear so small in Plate 98, they are reproduced again, here in this plate, but larger.

Number 1 illustrates by two views, the Triangular specimen of beautifully spotted granite. The picture to the left shows the face which has two flat planes, free of any calcareous tufa deposit. The picture to the right shows the back which is a slightly convex plane, heavily encrusted with a lime deposit.

Number 2 illustrates by two views the Wisconsin Winged specimen of porphyry material. The picture to the left shows the one face free of any calcareous tufa deposit. The picture to the right shows the other face, heavily encrusted with a lime deposit.

Plate 2/3 actual size. FROM THE COLLECTION OF CLAUDE U. STONE, PEORIA, ILLINOIS

FREAKS

Up to the present time slight mention has been made concerning the curiously designed or so-called "Freak" banner-stones. These objects are very rare and their range of distribution is not restricted to any particular area. The greatest number, however, are found within the Heart Area. This area has furnished more banner-stones than any other. Hence, it is only logical that one would find more *Freaks* here than anywhere else.

Previously many believed that a great percentage of the so-called *Freak* specimens were independently developed designs belonging to certain rare type groups. There are several reasons why it is credulous for one to accept such a theory. Undoubtedly, the curiously designed patterns referred to as *Freaks* can be divided into two groups. By analyzing the origin of each of these groups, one is able to understand this complex situation more easily. Furthermore, through systematic study of the origin of these groups, one discovers that these interesting objects were brought about in two different manners. Thus, the two groups are classified as follows:

CLASSIFIABLE . . . . . Group No. 1.
NON-CLASSIFIABLE . . . . . Group No. 2

CLASSIFIABLE FREAKS: Group No. 1 is comprised of two different classes. These classes can be identified by the letters A and B.

Class A consists of those which are usually varied in shape to the extent that their construction no longer corresponds to the classified patterns which show regulation of form. Yet the lines and planes of these *Freaks* are still so similar to the lines and planes of the classified designs developed through evolution that one is able to form a connection to whatever the type group may be. These particularly varied specimens were made by some individuals to please their special fancy or were the result of attempts to create new designs.

Class B consists of those which were usually made from broken or damaged banner-stones, which were originally those of regulation form. Regardless of the shape of the *Freaks* that comprise this class, many of the lines and planes of the original patterns still remain. Thus one is able to identify and classify the original design from which these particular *Freaks* were made.

For example: it has been noted that broken *Double Crescent* patterns were frequently transformed into *single-Crescent* designs. Let us assume that one of the wings of a *Double Crescent* was broken off. Now, let us attempt to discover how it can be salvaged. After a little study, one finds that it is relatively an easy task to saw off the corresponding wing and grind down the damaged area to preserve symmetry.

NON-CLASSIFIABLE FREAKS: Group No. 2 is comprised of stones of nondescript designs, which cannot be connected in any way to any of the thirty-two classified type patterns. These particular specimens are far rarer than those which are *classifiable*. Apparently they were also made by some individuals to please their special fancy or were the result of attempts to create new designs. If, however, a number of these nondescriptive patterns (probably four or five) were found to be identical, one could take the liberty to give them a name, thus forming a new type group. But such a type group can never be added to the *Banner-stone Tree of Evolution* established by the writer, unless the lines and planes would show an evolutionary development, thus forming a relationship to one of the eight primary forms.

After analyzing the construction of a great number of specimens of this group, it has been discovered that none of the designs so far observed can be directly connected in any way to any of the eight primary forms. Therefore, if a number of specimens of this group were found to be identical and were classified as a type group, it would be necessary to put them in a *Freak Group* by themselves because of the fact that they were not developed through evolution.

Frequently some of the curiously designed or *Freak* specimens are regarded as being doubtful or even counterfeit. It is true that some of them are not genuine. Those that are counterfeit were made by people who have attempted to make objects showing regulation of form, but

because of the lack of knowledge of the correct lines and planes, these manufactured patterns are incorrect in construction. Other *Freak* counterfeit specimens were made purposely in curious shapes by these unscrupulous persons. It may be difficult for many to determine whether some of these *Freak* objects are genuine or counterfeit. But those who have had experience can usually detect those which are counterfeit by the material from which they are made, the shape of the designs, the workmanship, and, most important of all, by the impossibility to produce an aged appearance.

One can, however, regard the majority of *Freaks* as being genuine. The percentage of doubtful or counterfeit specimens is very small, indeed. Merely because the designs of the *Freaks* are so entirely different from the designs of the classified patterns showing regulation of form, there is no reasons for anyone to brand them all as being doubtful or fakes. The writer has made an effort to secure photographs of almost every curiously designed banner-stone with which he has come in contact. These pictures have been assembled into three full page illustrations. The accompanying data for each of these plates gives a description of each specimen.

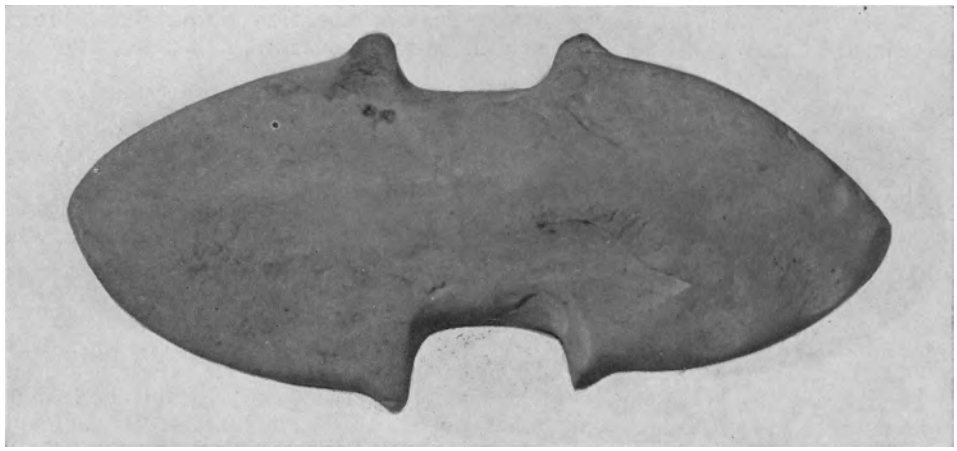


PLATE 102.

Fulton County, Illinois. Material, white flint ground down and highly polished, obliterating most all of the evidence of chipping. This specimen was found on the surface by Nelson Wagner in Lee Twp. in 1929. Size 5 x 2 1/4 inches.

Plate 10/11 actual size. CLAUDE U. STONE, COLLECTION, PEORIA, ILLINOIS

EXPLANATION OF PLATE 103

FREAKS

These curiously shaped banner-stones are classified by their construction to the Freak Groups to which they belong

Plate 5/11 actual size

No. 1—Perry County, Illinois. Material, finely grained black and green granite, surface polished. Found by Jewel Bennet, near Beaucoup Creek one-half mile from the city limits of Pinckneyville, in 1921. There is no reason why this specimen should not be classified as a banner-stone. Freak Group No. 2.
Claude U. Stone Collection, Peoria, Illinois

No. 2—Allegan County, Michigan. Material, banded-slate. Although this specimen is unusually designed it is related to the Crescent pattern. Freak Group No. 1, Class A. *Donald O. Boudeman Collection, Kalamazoo, Michigan*

No. 3—Indiana, County unknown. Material, banded-slate. This unusual specimen appears to be the result of an attempt to create a new design. Freak Group No. 2.
E. L. Renno collection, St. Charles, Missouri

No. 4—Shelby County, Missouri. Material, black hematite. This specimen has no perforation, but has two deep grooves across the middle of each face. Although the design is unusual it is similar in shape to the slate Butterfly patterns. Freak Group No. 1, Class A. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 5—Waupaca County, Wisconsin. Material, olive green slate. This unusually designed object is related to the Double Notched Butterfly patterns. Freak Group No. 1, Class A. *John Maffenbeir collection, Newark, New Jersey*

No. 6—Cass County, Illinois. Material, black and white spotted granite, surface highly polished. Found near the town of Virginia. This unusually designed specimen was probably made from a celt, and can not be connected to any of the classified patterns. Freak Group No. 2. *From the author's collection*

No. 7—Pickaway County, Ohio. Material, green banded-slate. Found near the town of Circleville. Apparently the perforation was drilled from each end with a flint drill, and the opening in the middle of the stone is very small. Although this specimen is unusually designed it is related to the Unnotched Butterfly patterns. Freak Group No. 1, Class A. *Claude U. Stone collection, Peoria, Illinois*

No. 8—Hancock County, Illinois. Material, white quartz. This unusual specimen may appear to be a club head, but because of the beautiful stone from which it is made, and the exquisit workmanship displayed, it may be better to classify it as a ceremonial object, probably as a banner-stone. Freak Group No. 2.
Philip C. Schupp collection, Chicago, Illinois

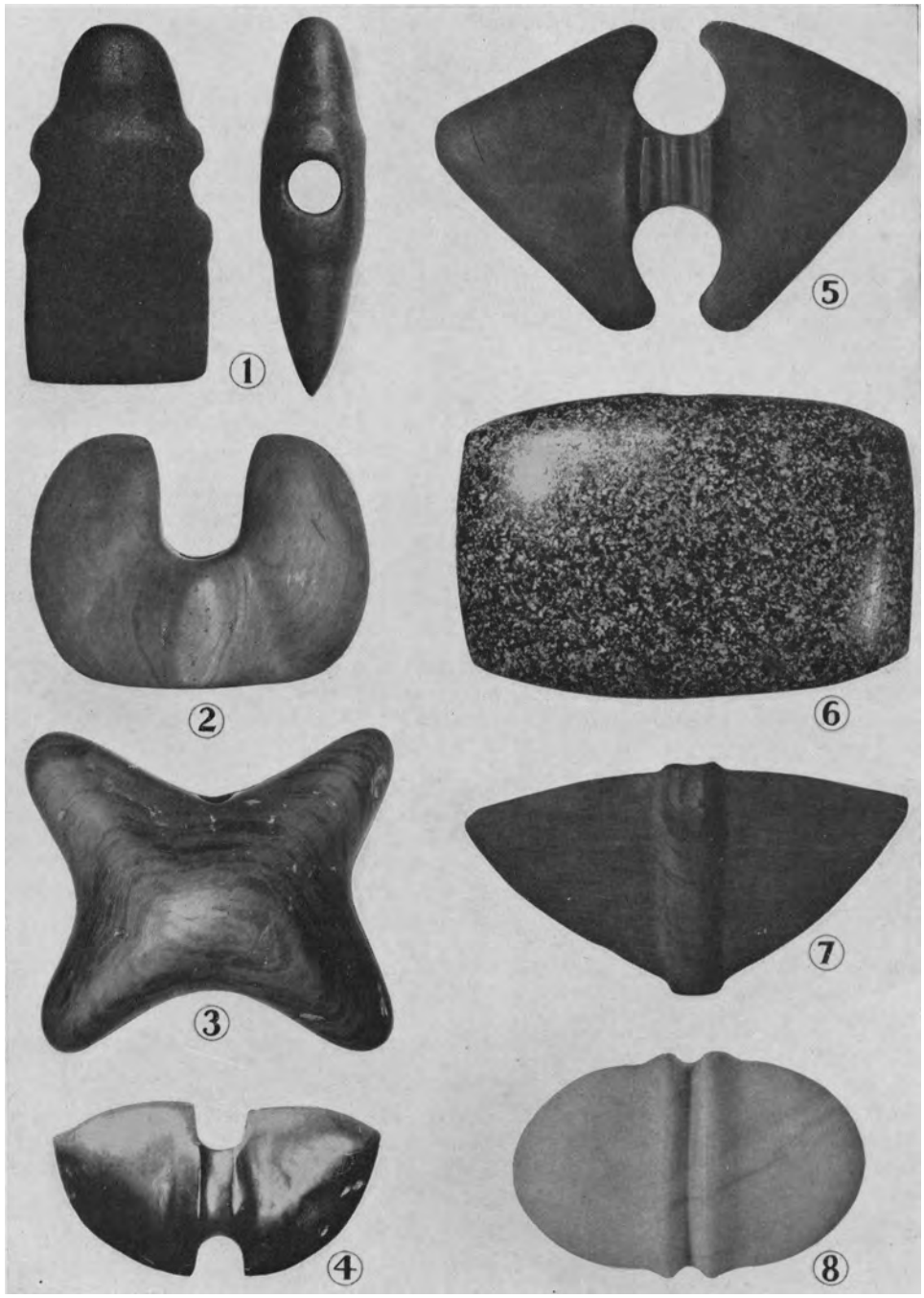


PLATE 103

EXPLANATION OF PLATE 104

FREAKS

These curiously shaped banner-stones are classified by their construction to the Freak Groups to which they belong

Plate 5/9 actual size

No. 1—St. Joseph County, Michigan. Material, banded-slate. This specimen is nothing more than a salvaged Double Crescent pattern which had become broken. Freak Group No. 1, Class B. *Donald O. Boudeman Collection, Kalamazoo, Michigan*

No. 2—Eaton County, Michigan. Material, banded-slate. This specimen is unusually designed, and can not be connected to any of the classified patterns. Freak Group No. 2. *Donald O. Boudeman Collection, Kalamazoo, Michigan*

No. 3—Richland County, Ohio. Material, banded-slate. This specimen was originally an Unnotched Butterfly form. Apparently one or both wings became damaged, and were then ground down. Freak Group No. 1, Class B.
Con Foster Museum Collection, Traverse City, Michigan

No. 4—Illinois, County unknown. Material, basalt. This specimen can not be connected to any of the classified patterns. Freak Group No. 2.
E. L. Renno Collection, St. Charles, Missouri

No. 5—Hillsdale County, Michigan. Material, banded-slate. This specimen is nothing more than one-half of a Double Crescent pattern which was broken parallel through the perforation. The damaged end was ground down, and a perforation was drilled through the stone between the two prongs. Freak Group No. 1, Class B.
Donald O. Boudeman Collection, Kalamazoo, Michigan

No. 6—St. Joseph County, Michigan. Material, green slate. This specimen was made from a damaged Double Crescent pattern, and is similar to that shown under No. 5. Freak Group No. 1, Class B.
Donald O. Boudeman,Collection Kalamazoo, Michigan

No. 7—Bond County, Illinois. Material, quartzite. Although this specimen is unusually designed it is related to the Rectangular Barreled patterns. Freak Group No. 1, Class A. *E. L. Renno Collection, St. Charles, Missouri*

No. 8—Lancaster County, Pennsylvania. Material, black soap-stone, Although this specimen is unusually designed it is related to the Crescent patterns. Freak Group No. 1, Class A. *John Maffenbeier Collection, Newark, New Jersey*

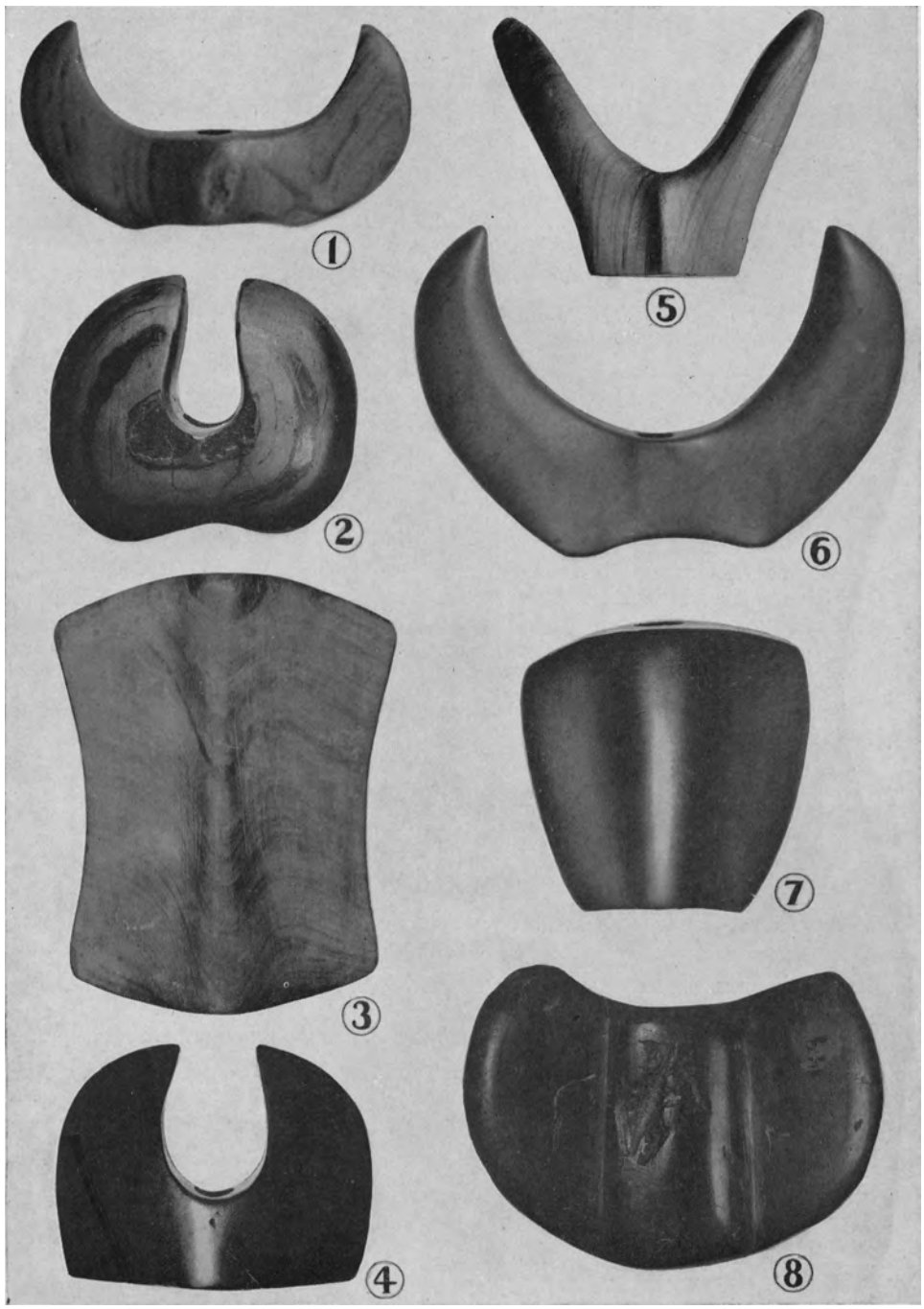


PLATE 104

EXPLANATION OF PLATE 105

FREAKS

These curiously designed banner-stones are classified by their construction to the Freak Groups to which they belong

Plate 1/2 actual size

No. 1—GEORGIA, County unknown. Material, steatite. Found in the Etowah Mound. Neg. No. 4/6891. Freak Group No. 2.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 2—TENNESSEE, County unknown. Material, black polished steatite. An end view of this specimen is a diamond shape. Freak Group No. 2.
Philip C. Schupp collection, Chicago, Illinois

No. 3—HAMILTON COUNTY, TENNESSEE. Material, yellow quartz. Freak Group No. 2.
E. L. Renno collection, St. Charles, Missouri

No. 4—POSEY COUNTY, INDIANA. Material, banded-slate. This specimen was probably made from one wing of a Unnotched Butterfly form, which had become broken through the perforation. Freak Group No 1, Class B.
Claude U. Stone collection, Peoria, Illinois

No. 5—RANDOLPH COUNTY, ILLINOIS. Material, ferruginous quartz. Originally this specimen was a Single-face Bottle pattern. Apparently the necks were broken off, and the damaged ends were ground down. Freak Group No 1, Class B.
E. L. Renno collection, St. Charles, Missouri

No. 6—OCONTO COUNTY, WISCONSIN. Material, copper. The lines and planes of this object are similar to those of the Wisconsin Winged patterns. Catalogue number A-4212. Freak Group No 1, Class A.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 7—CASS COUNTY, MICHIGAN. Material, banded-slate. Freak Group No. 2.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—GREEN COUNTY, INDIANA. Material, blue banded-slate. Freak Group No. 1, Class A.
Albin A. Elchert collection, New Riegel, Ohio

No. 9—KENTUCKY, County unknown. Material, dark gray slate. Freak Group No. 2.
Philip C. Schupp collection, Chicago, Illinois

No. 10—WISCONSIN, County unknown. Material, finely grained yellow sand stone, discolored from age. Freak Group No. 2.
Philip C. Schupp collection, Chicago, Illinois

No. 11—HENRY COUNTY, TENNESSEE. Material, red hematite. This specimen may have been used as a bead, but because it has a large perforation one may classify it as a banner-stone. Catalogue number 88. Freak Group No. 2. *From the author's collection*

No. 12—SHELBY COUNTY, INDIANA. Material, grayish yellow indurated clay-stone. This unusual object is probably an effigy of a bird. The large perforation permits one to classify it as a banner-stone. Freak Group No. 2.
Claude U. Stone collection, Peoria, Illinois

No. 13—PARKE COUNTY, INDIANA. Material, banded-slate. Freak Group No. 2.
Con Foster Museum collection, Traverse City, Michigan

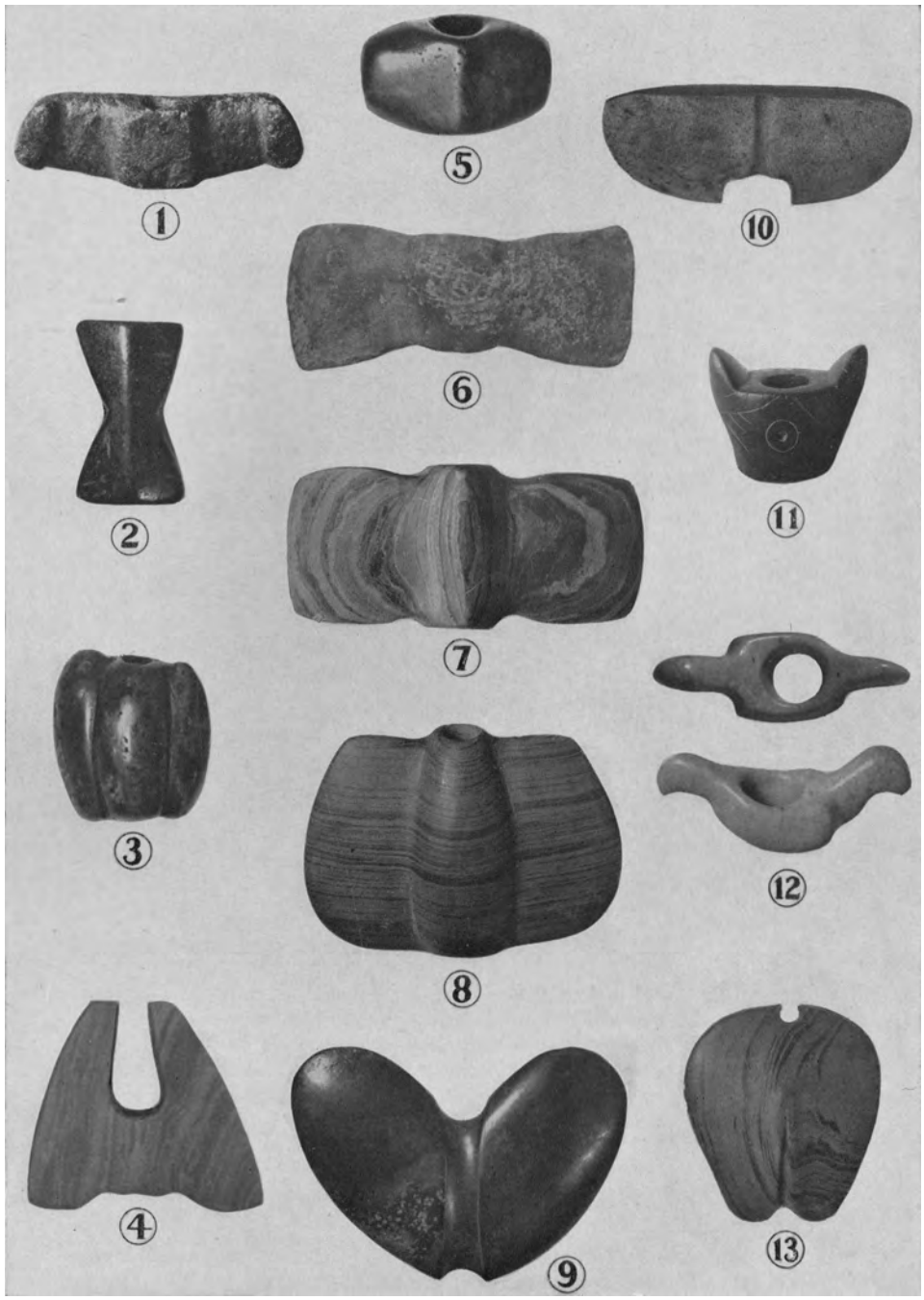


PLATE 105

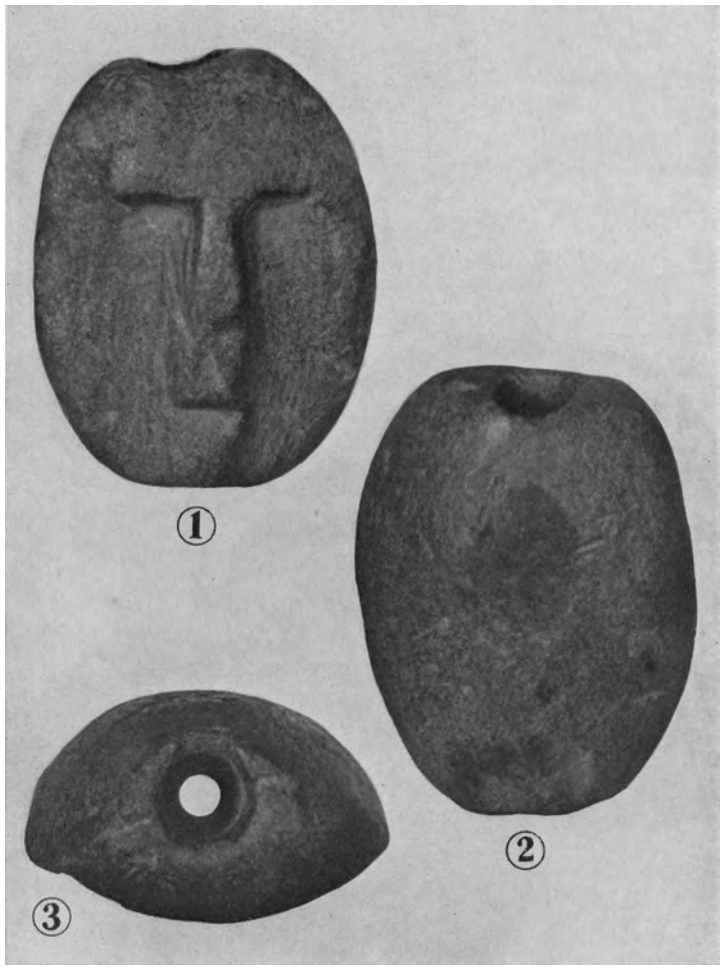


PLATE 106. Bartow County, Georgia. Material, dark green steatite, drilled from each end with a solid drill-stick. Found near the town of Cartersville. This object can be classified as an early made Southern Humped primary form, upon which was crudely carved on the back plane a face. This is the only effigy banner-stone the writer has observed.

No. 1—This view shows the side upon which was carved in relief a face.

No. 2—This view shows the side which is convex in shape.

No. 3 This view shows the end. Note the conical shaped drilling.

Plate actual size.

MRS. BLANCHE BUSEY KING COLLECTION, ANCIENT BURIED CITY, WICKLIFFE, KEN.

COUNTERFEIT SPECIMENS

The manufacture of counterfeit relics, antiques, art objects, and other articles of value has been practiced throughout the civilized world for a great many years. Oil paintings done by old masters have been occasionally copied so cleverly that they were sold as being genuine by unscrupulous persons at fabulous prices. Such copied paintings, however, are easily detected as reproductions by expert art critics who are capable of detecting the difference. Egyptian mummies and the shrunken heads fashioned by the savages of Equador, South America, are specimens that one would probably never suspect could be counterfeited. Yet these objects have been reproduced with paper-mache, composition, and hair, and sold for the genuine article to inexperienced parties who lacked the knowledge to realize that they were being defrauded.

It is not uncommon for the collectors of Indian relics to occasionally come in contact with counterfeit artifacts. The people who make these objects will usually pass off their wares to those unskilled or uninformed. There should be no reason for those who lack experience to purchase counterfeit objects. The professional archaeologists and the advanced collectors who have had much experience are easily available and willing to pass their judgment on any specimens brought to them by those who may seek this information. Those who have at some time obtained counterfeits should not be discouraged, but should be more cautious in their future buying.

It has been said by many that counterfeit relics have flooded the country. This statement is not true. The manufacture of stone relics is not so extensive as many believe. The percentage of such objects is comparatively very small. It is true, however, that counterfeit specimens can be found in many collections, but usually the collectors who have them are aware of the fact.

Today, many of the leading museums will accept counterfeit artifacts

and will display them as non-genuine in a section by themselves. Exhibitions of this nature permit one to observe the difference between those which are counterfeit and those which are genuine. Furthermore, the manufactured objects which are accepted by the museums are taken out of circulation.

There are several reasons why the counterfeit objects are usually easily detected. It is very obvious that the people, who have made them and those who may still be making them know practically nothing about Indian relics. These individuals are not familiar with the characteristic features of construction which the genuine artifacts have, or what is termed "regulation of form." This lack of knowledge of correct construction and the machine methods employed for their making together with the impossibilities to produce age artifically to manufactured objects, makes it rather easy for one who has experience to detect the spuriousness of these objects.

Observors will frequently classify unusual or unique relics as doubtful or even counterfeit. It is very plausible that the majority of such objects are in reality genuine. The reason for their misjudgment is due to the fact that many specimens are so rare or so unusual that they have never seen them before. These rare or unusually designed relics were made to suit some individual's fancy. It is not only the untrained collectors who frequently misjudge artifacts but the professionals err in this field as well. Archaeologists of many years experience are continually coming in contact with artifacts that they have never seen before.

Much of the material taken recently from the Temple Mound in La Flore County, Oklahoma, consisted of objects that were never seen before. For example: great numbers of unusually designed monitor pipes were found. Some of these pipes are twenty-eight inches in length, and are made of a gray sandy shale. The stems of these pipes are round. A number of the large specimens have two large bowls and the two long stems have separate stem holes. If a single pipe of this kind had been observed by many collectors there is no question that it would have been regarded as doubtful or even counterfeit.

Over a period of years a number of persons have manufactured relics. Some of these people made their livelihood in this way for but a short time, while others have continued for years on a rather extensive scale.

There seems to be no efficient way to eliminate the traffic in manufactured relics. A number of people have been repeatedly exposed in various publications, but the manufacture and sale of counterfeited articles still continues.

Probably, one of the earliest and best known group in this field were several men of the Robinette family who sold very fresh looking relics to untrained collectors throughout the United States. Their wares consisted mainly of queer effigy pipes, made of red sand-stone, and many other things. These were crudely made and date back over thirty years.

The most notable person today, who has come into the limelight for manufacturing relics is probably a man who lives in Kentucky. The writer shall refrain from mentioning names, although he would like to take the liberty to do so. The extent of this man's operations undoubtedly surpasses that of the Robinette family. For the last ten or twelve years vast numbers of counterfeit banner-stones, discoidal-stones, bird-stones, spatulates, and ceremonial axes have been made by this fakir in Kentucky, and distributed to untrained collectors throughout the United States. It was not long, however, before the collectors were aware of these counterfeited relics and discovered the person who was responsible for them.

The writer has discovered that many amateur collectors will buy manufactured artifacts from this person in Kentucky knowingly. The reason why these purchases are made is because genuine problematicals are very difficult to obtain and usually quite expensive. Thus some of the amateur collectors are satisfied to own the so-called reproductions.

The majority of the objects manufactured by the Kentuckian are made from calcite and fossiliferous lime-stone. Both of these materials are soft and easily worked. The calcite material is secured from near-by caves. The color of this rock is of various shades of white, cream, and amber. Because this material is translucent, many of the untrained collectors believe it to be quartz.

The fossiliferous lime-stone which was also extensively used was probably secured in a near-by locality. The color of this rock is usually dark gray or dark brown, finely speckled or spotted with crinoid stems, thus having the appearance of a granite. Many collectors did not believe otherwise. This fossiliferous rock is also quite soft and easily worked.

Attempts have been made to counterfeit almost every kind of artifact,

including those made of stone, bone, copper, shell, and pottery. But since this volume pertains only to banner-stones it is necessary to dwell only upon the counterfeiting of these objects.

The amateur collectors should learn to know the different materials from which the differently designed banner-stones were made. If this knowledge is obtained, they will then discover that many patterns are usually made of banded-slate, others are made of spotted granites, and still other patterns are made of various quartz materials. In this way they will be able to guard themselves, to a certain extent, against fraudulence.

It is very evident that the people who manufacture banner-stones have no knowledge of the various materials customarily used by the prehistoric Indians for the making of the different patterns. It is, however, a blessing that these unscrupulous persons lack this knowledge. Judging from the counterfeit banner-stones examined, it also appears that the majority of them were made by mere guess. The designs are invariably wrong in construction.

It may be interesting to point out why the majority of the counterfeit banner-stones are so ridiculously out of key. For example: the genuine *Double Notched Butterfly* patterns of banded-slate from the Heart Area are made of no other materials than this stone. On a recent visit to The Ohio State Archaeological and Historical Society Museum, at Columbus, Ohio, the writer conferred with Director H. C. Shetrone, to verify this statement. The writer was informed that he likewise had never seen one of these patterns made from any other material than banded-slate. Yet this pattern has been counterfeited in great numbers from calcite and fossiliferous lime-stone. This design seems to have been the Kentuckian's favorite.

These unscrupulous people who manufacture banner-stones are not satisfied to make their wares somewhat similar to the genuine designs, but invariably will make unique or queer shapes. The inaccurate design of these objects is helpful in identifying them as fakes. Some of these specimens are made into a shield design, yet with two added notches they are supposed to represent a freak shaped *Butterfly* pattern. Recently the writer observed a *Double Notched Butterfly* counterfeit that was made of calcite which measured some twelve or fifteen inches across. Such things are absurd and ridiculously wrong.

A very unusual case of manufacturing banner-stones from real rose quartz occurred in Chicago, Illinois, a few years ago. The person who made these specimens was a lapidarist, whom the writer later met and conferred with. This man received a letter and a carefully made drawing of a banner-stone from a person in North Carolina, asking him if he could grind out, and drill four objects of real rose quartz according to the drawing and also to quote him prices. After the order was placed the lapidarist, not knowing he was doing any wrong, proceeded to complete this order. The North Carolinian was very anxious to receive the finished work as soon as possible. When two of the objects were finished they were sent to the customer. Later the other two were finished, but were withheld from shipment because the purchaser had not as yet paid for those which were sent to him. The man in North Carolina never did pay for any of this work. The most interesting point of this story is the fact that the drawing which the lapidarist had to follow was the design of the *Notched Ovate* (lower Alleghany) ultimate designs. These patterns occur in the Lower Allegheny Area and are usually made of various granite materials. Yet the rose quartz rock from which these counterfeit specimens were made is found in the Black Hills of South Dakota. The fact that this design was made of real rose quartz, a material found some two thousand miles away from the place where these patterns occur is enough evidence to brand these objects as fakes. Furthermore, these particular patterns were usually made of various granite materials, but never of quartz. One of the counterfeits which was withheld from shipment by the lapidarist is shown in Plate 107 under No. 4.

The writer was encouraged by Prof. H. C. Shetrone to have a chapter in this volume on counterfeit banner-stones and also to show pictures of them, believing it would be beneficial to many. About twenty of the so-called fakes are arranged into two separate Plates No. 107 and No. 108. The data accompanying each plate gives a description of each specimen citing the reasons why their construction and the materials from which they are made is so preposterously wrong, thus enabling one to detect them easily as fakes. It is hoped that this chapter will be beneficial to many, who through lack of experience have not acquired the knowledge to be able to detect the counterfeit artifacts, and particularly those which were made to represent banner-stones.

EXPLANATION OF PLATE 107

COUNTERFEIT SPECIMENS

Plate 2/5 actual size

The purpose of this plate is to show how ridiculously out of key these counterfeit specimens are. These objects were made to represent four different ultimate designs. The material that was used for their making is sufficient proof to brand them as fakes, because these particular patterns were never made of any of these materials by the prehistoric Indians. All of these objects illustrated with the exception of No. 4 were undoubtedly made in the state of Kentucky by the party mentioned in the text.

No. 1—Material, fossiliferous limestone artificially colored brown to give it an aged appearance. This material was selected because it was easily worked, and also because of the fact that the small crinoid stems give this stone a speckled appearance, and it was hoped would be mistaken for spotted granite. This object is to represent a Double Notched Butterfly pattern, Type No. 25, but it is entirely wrong in construction.

No. 2—Material, translucent calcite, amber color, and was undoubtedly secured from a cave in the state of Kentucky. This object is supposed to represent a Notched Ovate (lower Allegeny) Type No. 15.

No. 3—Material, brown and white mottled calcite, and was undoubtedly secured from a cave in the state of Kentucky.

No. 4—Material, rose quartz. This specimen is described in the text as the one made in Chicago, Illinois. This object is supposed to represent a Notched Ovate (lower Allegany) Type No. 15.

No. 5—Material, calcite, cream color, and was undoubtedly secured from a cave in the state of Kentucky. This object is to represent a Crescent pattern similar to those found in the New England Area, which are usually made of slate, or trap rock materials.

No. 6—Material, translucent calcite, amber color. This object is to represent a Crescent pattern similar to those found in the New England Area.

No. 7—Material, translucent calcite, amber color. This object is to represent a Crescent pattern similar to those found in the New England Area.

No. 8—Material, black shale, and was undoubtedly secured in the state of Kentucky. This object is to represent a Double Notched Butterfly pattern, Type No. 25, but it is entirely wrong in construction.

No. 9—Material, veined translucent calcite, cream color. This object is to represent a ultimate Wisconsin Winged pattern, Type No. 18, which are always made of phorphyry or spotted granite materials. Note also that the construction of this object is entirely wrong.

No. 10—Material, fossiliferous limestone, artificially discolored a rusty brown to give it an aged appearance.

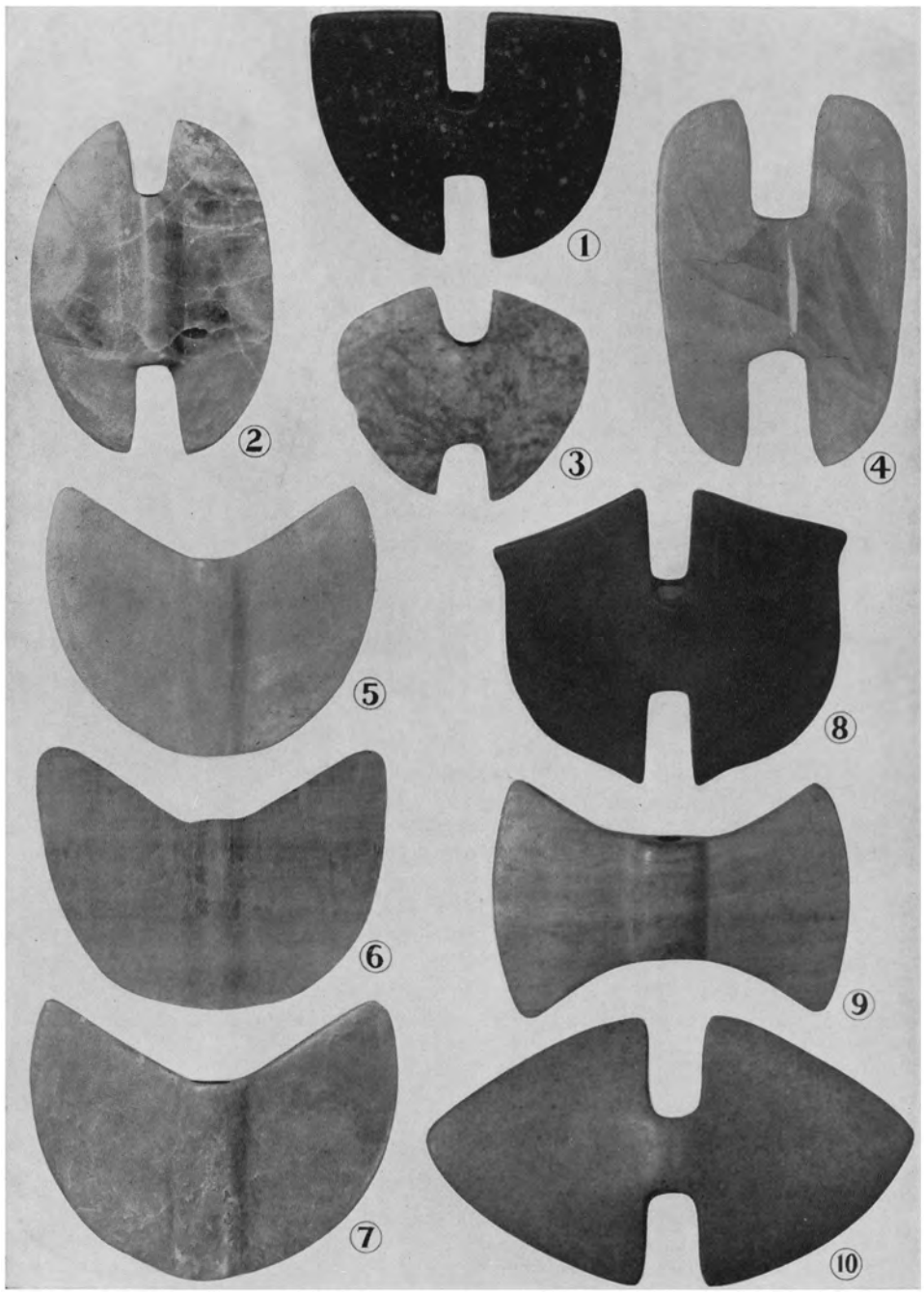


PLATE 107

EXPLANATION OF PLATE 108

COUNTERFEIT SPECIMENS

Plate 2/5 actual size

The purpose of this plate is to show how ridiculously out of key these counterfeit specimens are. These objects were made to represent Double Notched Butterfly patterns, Types No. 25, which are found in the Heart Area. The material that was used for their making is sufficient proof to brand them as fakes, because these particular patterns were never made of any other material than banded-slate by the prehistoric Indians. All of these objects illustrated with the exception of No. 1 were undoutbedly made in the state of Kentucky by the party mentioned in the text.

No. 1—Material, appears to be marble, similar to that so commonly used for soda fountains. The color is various shades of white, tan, and flesh tints, beautifully mottled.

No. 2—Material, white calcite, and was undoubtedly secured from a cave in the state of Kentucky.

No. 3—Material, dark grayish brown fossiliferous limestone, soaked in oil to give it an aged appearance.

No. 4—Material, white calcite, and was undoubtedly secured from a cave in the state of Kentucky.

No. 5—Material, fossiliferous limestone, artificially colored brown to give it an aged appearance. This material was selected because it is easily worked, and also because of the fact that the small crinoid stems give this stone a speckled appearance. The parties who made these objects probably believed that this material would be mistaken for spotted granite. This rock was apparently secured in the state of Kentucky.

No. 6—Material, translucent calcite, cream color, and was undoubtedly secured from a cave in the state of Kentucky.

No. 7—Material, creamy white translucent calcite, and was undoubtedly secured from a cave in the state of Kentucky.

No. 8—Material, translucent calcite, amber color, and was undoubtedly secured from a cave in the state of Kentucky.

No. 9—Material, fossiliferous limestone, artificially colored brown to give it an aged appearance. This material was selected because it is easily worked, and also because of the fact that the small crinoid stems give this stone a speckled appearance. The parties who made these objects probably believe that this material would be mistaken for spotted granite. This rock was apparently secured in the state of Kentucky.

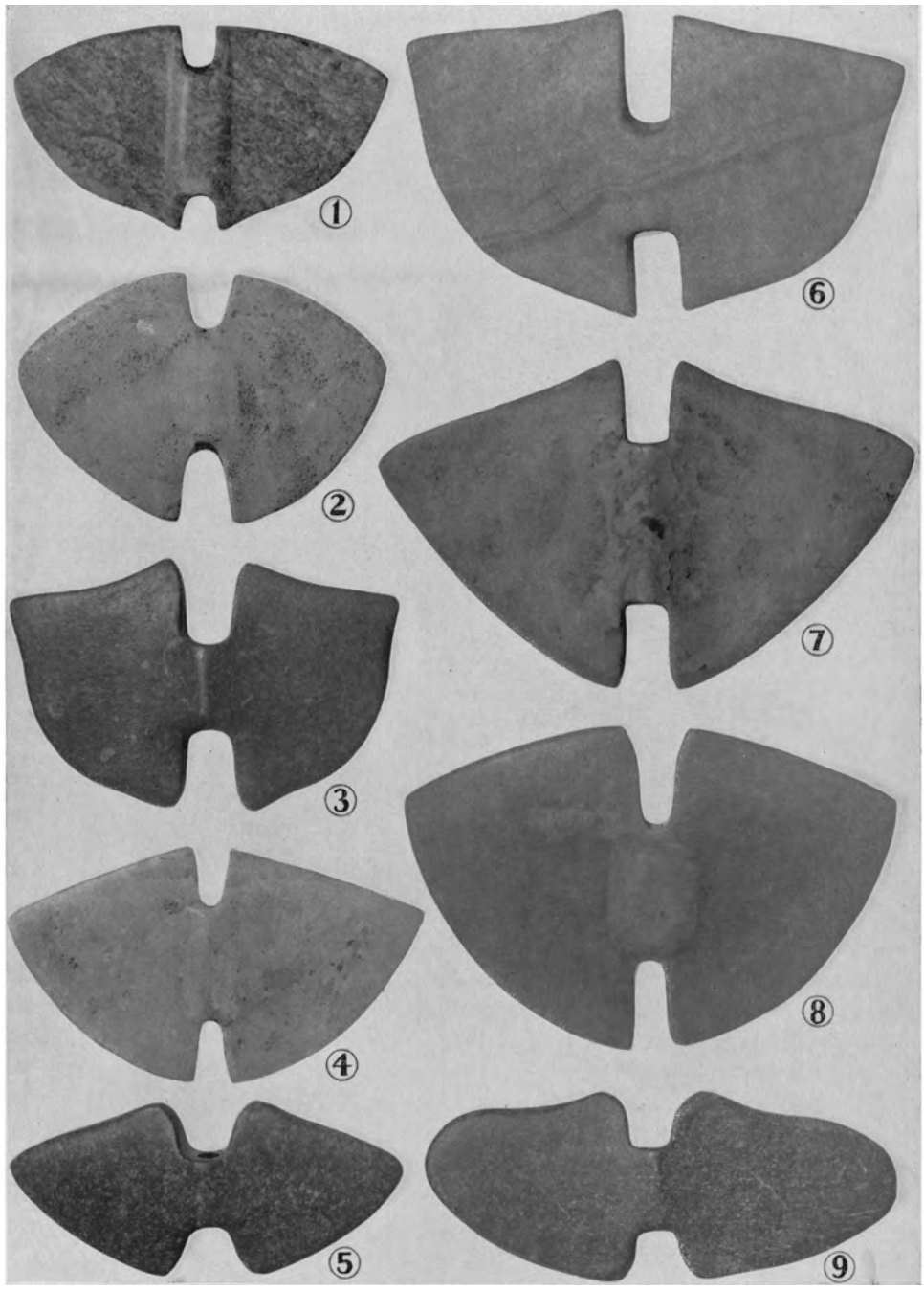


PLATE 108

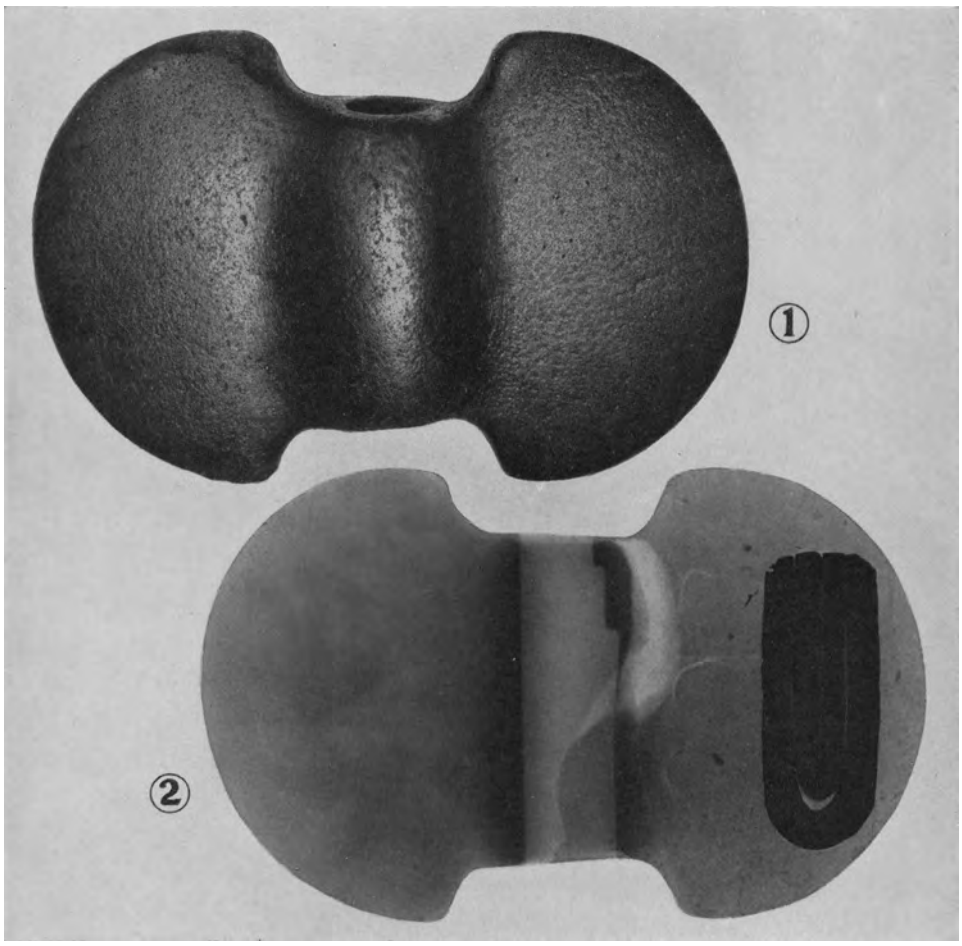


PLATE 109.

Number 1—Ohio, County unknown. Material, dark brownish red opaque quartzite. The wing to the right of this broken Quartz Butterfly pattern has been carefully restored by the author in such a manner it is not easily detectable. It may be well to mention that the leading museums frequently restore rare archaeological specimens for display purposes.

Number 2—This X-ray picture, made by Dr. P. F. Titterington, shows the line of fracture. The dark area on the restored right wing is soldering lead, placed in the plaster to add to its weight. This object will balance when laid down. The upper right hand corner of the perforation shows two angular shaped off-sets, caused by using smaller drill-sticks so that the completed perforation would be in true center. The drilling was done from the lower end of the perforation.

Plate 4/5 actual size. FROM THE AUTHOR'S COLLECTION

HUMPED GROUP

TYPE No. 1

The construction of the patterns that comprise this group is apparently the simplest design of all banner-stones. Nevertheless, this *single-face* group proves to be a very interesting one. After observing the simply arranged planes of the *Southern Humped Primary Form No. 1*, one is left with the impression that the design may be the oldest of the eight primary forms. This is the only group of banner-stones which show that the primary forms, blending forms, and type specimens are very similar to one another in construction. The back of these patterns is a flat plane, the face is humped, and the end view is semi-circular in shape.

The range of distribution of these objects extends from the Primary Area northward through central and western Tennessee and Kentucky, and the southern half of the states of Ohio and Indiana. Specimens are also found in the eastern part of Arkansas and Missouri and southern Illinois.

Usually, the primary forms are considerably larger in size than the type specimens found farther north in the Heart Area. This group is the only group which have patterns that diminish in size as they extend northward. The patterns of all other groups from the Southern Area are usually considerably smaller than those more highly developed and found farther north. There are occasional exceptions, of course.

The primary forms are usually made of miscellaneous materials including gray steatite, fine grained granites, variously colored sand-stone and quartzites. The blending forms found farther north are usually made of limonite, ferruginous slate, red hematite, and, more rarely, unattractive granite materials. The type specimens found in the Heart Area are usually made of beautifully spotted granites. It is very evident that this material was adopted in the latter part of the Banner-stone Era for the making of these patterns to add to their ceremonial significance. Prior to that time material signified but little, if any, ceremonial importance.

(*Continued on Page 238*)

EXPLANATION OF PLATE 110

HUMPED GROUP

Primary Forms No. 1 and Blending Forms from the Primary and Middle Mississippi Valley Areas

CLASS A AND B SPECIMENS

Plate 2/3 actual size

No. 1—FULTON COUNTY, GEORGIA. Material, fine grained gray granite. Size 2 1/2 x 2 inches. Catalogue number 37. Class A specimen. *From the author's collection*

No. 2—COLUMBIA COUNTY, GEORGIA. Material, green and white spotted granite, discolored from age to a rusty color. Size 2 5/8 x 2 inches. Collected by the author. Class A specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—FAIRFIELD COUNTY, CONNECTICUT. Material, black polished steatite. Size 2 5/8 x 2 1/2 inches. Class A specimen. *From the author's collection*

No. 4—MICHIGAN, County unknown. Material, banded-slate. The back is flat, the face is convex. Size 3 x 2 1/8 inches. Class B specimen. *From the author's collection*

No. 5—LINCOLN COUNTY, MISSOURI. Material, red hematite. The back is flat, the face is convex. Drilling is about one half completed by solid stick method. Size 2 1/2 x 1 1/2 inches. Class B specimen. *From the author's collection*

No. 6—WHITE COUNTY, ILLINOIS. Material, dark gray and white speckled granite, weathered and discolored brown from age. No evidence of drilling. The back is flat, the face is convex, end view semi-circular. Size 2 5/8 x 2 inches. Class B specimen. *From the author's collection*

No. 7—RICHMOND COUNTY, GEORGIA. Material, black and white speckled granite, covered with a rusty iron deposit from age. No evidence of drilling. The end view is semi-circular in shape. Size 3 x 2 5/8 inches. Class A specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—WAYNE COUNTY, MISSOURI. Material, plain brown ferruginous slate. Found in June, 1931. Size 2 1/4 x 1 7/8 inches. Class B specimen. *From the author's collection*

No. 9—OHIO COUNTY, KENTUCKY. Material, white sugar quartzite, discolored tan from age. No evidence of drilling. The end view is semi-circular in shape. Size 2 7/8 x 2 1/8 inches. Class A specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

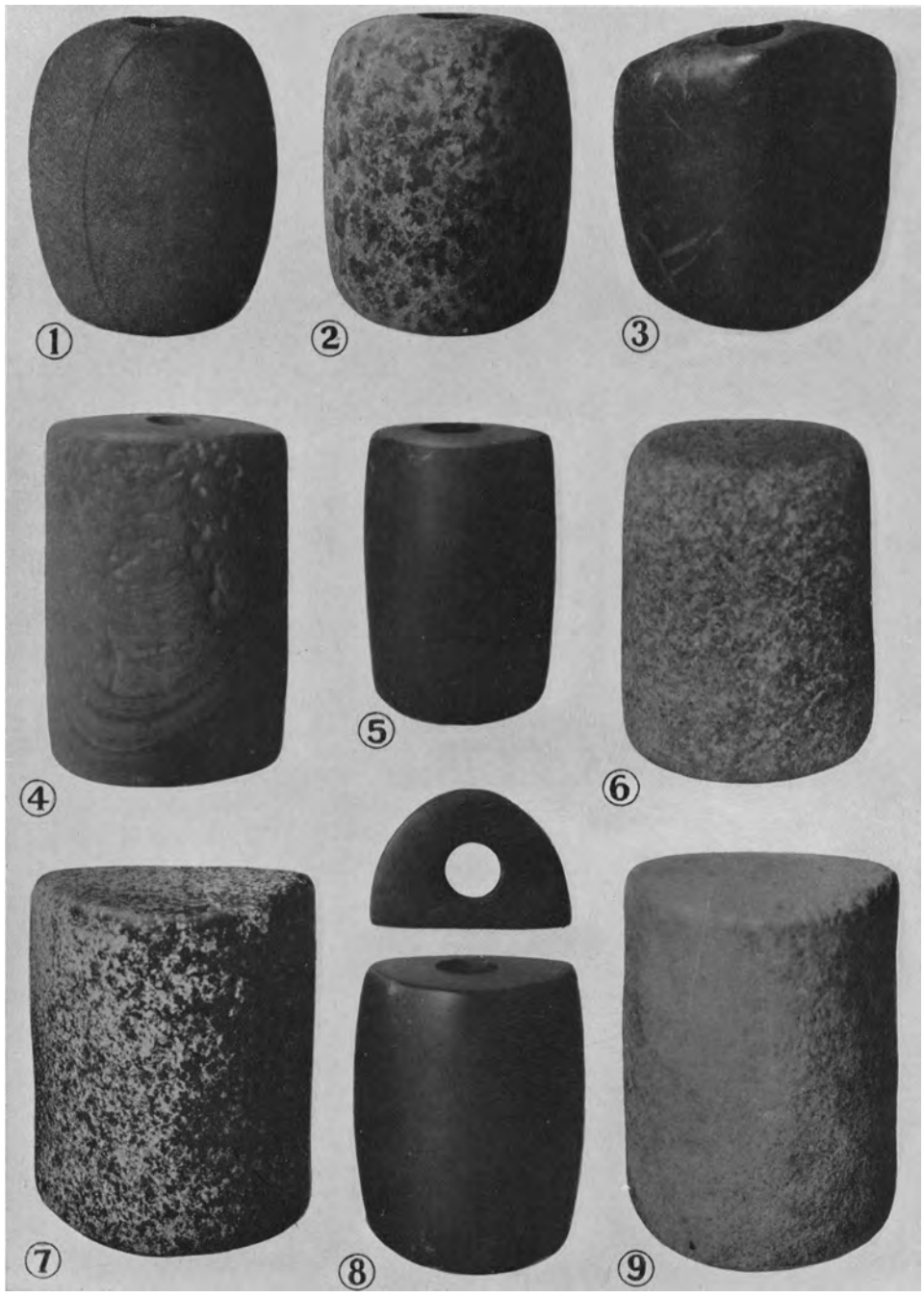


PLATE 110

EXPLANATION OF PLATE 111

HUMPED GROUP

Primary Forms No. 1 and Blending Forms from the Primary and Middle Mississippi Valley Areas

CLASS A AND B SPECIMENS

Plate 2/3 actual size

No. 1—Towns County, Georgia. Material, gray speckled steatite. Primary form. Class A specimen. *From the author's collection*

No. 2—Elbert County, Georgia. Material, gray steatite. This is the same specimen shown in Plate No. 8. Primary form. Class A specimen. *From the author's collection*

No. 3—Alabama, County unknown. Material, gray steatite. Primary form. Class A specimen. *E. W. Payne collection, Springfield, Illinois*

No. 4—Macon County, North Carolina. Material red and gray mottled granite. If this specimen was found in the Heart Area it could be classified as a type, because the granite material from which it is made is mottled and spotted. Class B specimen. *Sam W. Cathcart collection, Anderson, South Carolina*

No. 5—Lawrence County, Arkansas. Material, ferruginous slate. Blending form. Class B specimen. *From the author's collection*

No. 6—Georgia, County unknown. Material, gray steatite, showing disintegrated cavities from age. Primary form. Class A specimen. *From the author's collection*

No. 7—Johnson County, Illinois. Material, ferruginous slate. Blending form. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 8—Clark County, Illinois. Material, green speckled granite. Blending form. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 9—Harrison County, Indiana. Material, polished tan mottled quartzite. Blending form. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

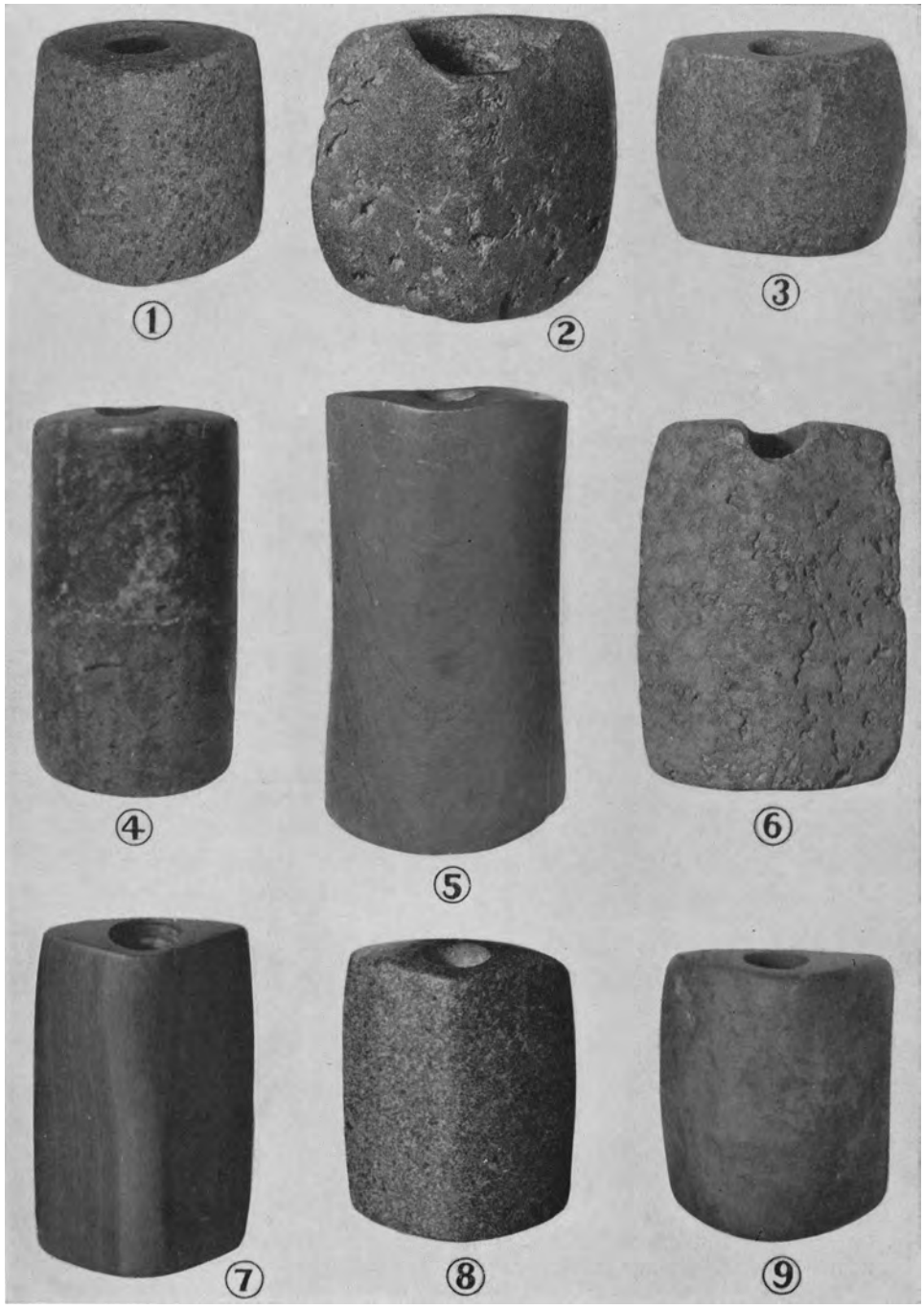


PLATE 111

EXPLANATION OF PLATE 112

HUMPED GROUP

Humped Types No. 1 of Various Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/8 actual size

No. 1—PERRY COUNTY, OHIO. Material, black and white mottled granite, discolored brown from age. Drilling 3/16 inch deep.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 2—SENECA COUNTY, OHIO. Material, black and white spotted granite, discolored tan from age. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—STEPHENSON COUNTY, ILLINOIS. Material, red conglomerate granite. On the right is an X-ray picture to show the solid stick drilling which was done from each end.
B. W. Stephens collection, Quincy, Illinois

No. 4—MARROW COUNTY, OHIO. Material, black and white spotted granite, badly disintergrated from age. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 5—LOGAN COUNTY, OHIO. Material, black and white speckled granite. Solid stick drilling 1/4 inch deep. Surface polished. *From the author's collection*

No. 6—MARION COUNTY, OHIO. Material, black and white marked granite, badly disintegrated from age. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 7—SCOTT COUNTY, ILLINOIS. Material, black and white spotted granite.
B. W. Stephens collection, Quincy, Illinois

No. 8—DELAWARE COUNTY, INDIANA. Material, light gray indurated clay-stone. An end view is shown above. *From the author's collection*

No. 9—LUCAS COUNTY, OHIO. Material, light colored quartzite, speckeled with shades of brown. An end view is shown above.
Sprague W. Chambers collection, Kalamaozo, Michigan

No. 10—LOGAN COUNTY, OHIO. Material, black and white spotted granite. Catalogue No. 33. An end view is shown above. *From the author's collection*

No. 11—VERNON COUNTY, WISCONSIN. Material, dark olive green indurated clay-stone, highly polished. Found near the town of Viroqua. An end view is shown above.
From the author's collection

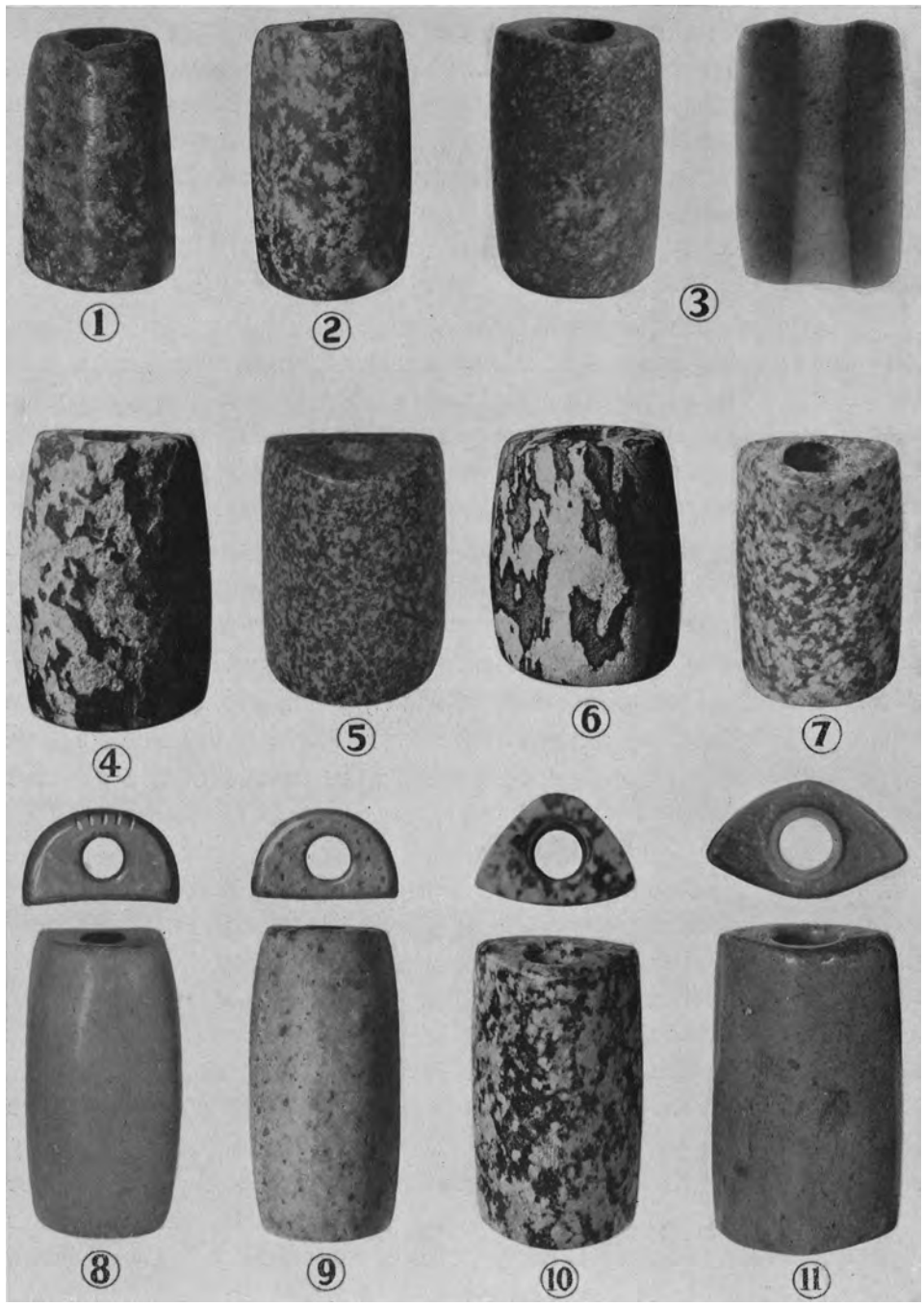


PLATE 112

It may seem rather strange that the writer has classified these patterns by the *A, B, C system* regardless of the fact that the lines and planes of the primary forms are so similar to those that are regarded as types. This problem can be easily explained. The various materials used for the making of the specimens of this group and also the locality in which they occur, enables one to note their evolutionary development and divide them into three phases. Then, by the use of the *A, B, C system* these phases can be classified.

A very unusual observation noted concerning this group is the fact that the type specimens are the only ultimate designs developed within the state of Ohio made of spotted granite materials. It is very apparent that all other type specimens developed within this area are usually made of banded-slate. Just why spotted granite was used so exclusively for the making of this simply designed pattern is difficult to say.

The majority of the primary and blending forms were usually drilled from one end. Very few are found which show incomplete drilling. A large percentage of the type specimens, however, do show incompleted drilling which was usually done from each end with a solid wooden drill-stick. The completed perforations are fairly small, and frequently those which were drilled from each end have a very small opening in the middle of the stone, on account of the conical shaped drilling done with solid wooden drill-sticks.

Because the majority of the types are usually so small, one may believe that possibly these objects were used ornamentally. It is probable that they were used in various ways and for various purposes. Possibly they may have been fastened to necklaces, attached to the possessor's arms, fastened to pipe stems, used as hair ornaments, or as tubes by the medicine men to cure diseases, much in the same manner that the larger *Tubular* patterns were probably used. Such theories seems plausible because the perforations through many of these objects are too small to allow them to be placed on the ends of staffs. It matters little how they were used. There still is no reason for anyone to question their significance because of size or the small perforations. Undoubtedly the prehistoric Indians regarded these particular patterns as ceremonial symbols although many were probably used ornamentally.

CONCAVE HUMPED GROUP

TYPE No. 2

It is very obvious that the origin of this group of banner-stones can be traced to the *Southern Humped Primary Form No. 1*. A description of this simple pattern was given in the previous article concerning the *Humped Group*. Therefore, it is unnecessary to describe it again.

This group is unusually interesting because of the fact that the type specimens are so entirely different in construction from those of the blending forms and the primary forms from which they were developed. Because of this constructional difference there may be some who would doubt if there actually exists any evolutionary relationship between these modified patterns.

The evolution of this group was a very difficult problem to solve. A decision was made only after long research. The writer has become convinced that the designs which he now regards as types and those he regards as blending forms and primary forms are directly related to one another through evolution. It was, however, comparatively easy to discover the connection of the blending forms to the primary forms. It is also very obvious that there exists no other patterns except those which are classified as the blending forms which can be associated to the unusually designed type specimens. Therefore, it was decided to establish these particular and variously designed patterns into an independent type group.

The face of the early designed blending forms are similar in shape to the face of the patterns that comprise the previously described group. The construction of the back of the specimens of these two groups is entirely different. The back of the patterns of the *Humped Group* is a flat plane, while the back of the early designed blending forms of this group is concave. The end or cross-sectional view is similar in shape to that of a partial eclipse.

The earliest made blending forms occur in the Lower Mississippi Valley Area. From this area the making of these particular shaped patterns gradually extended northward into the Middle Mississippi Valley Area and also the Lower Ohio Valley Area.

The blending forms found in the Mississippi Valley Areas are usually made of various granite materials including both the plain and the spotted varieties. The spotted varieties usually predominate.

The blending forms vary greatly in size. Those from the Lower Mississippi Valley Area are considerably smaller than those found farther north. Frequently one can note specimens from the Middle Mississippi Valley Area that are exceptionally large.

The largest specimen from this area so far observed is shown in Plate 115, under No. 5. This unfinished object is rather highly developed, and is very unusual because of its abnormal size, weighing two and one-half pounds. The surface of the back shows pecking, and the surface of the face shows considerable grinding. The incompleted perforation is five-eighths of an inch in diameter, and is drilled one inch in depth, showing a broken off protruding core, one-eighth of an inch in length.

Estimating the specimens from the Mississippi Valley Areas, it has been discovered that approximately over fifty per cent of them show incompleted drilling. Because of the presence of the protruding cores in these incompleted perforations, it is very obvious that the drilling was done with hollow reed or bone. It is rather strange that so large a percentage of the blending forms would have so many incompleted perforations. Just why this fact is so noticeably true we cannot say. The only reason one can give is that they were probably lost before they were finished.

If we observe the evolution of the design of the blending forms, we will note that the curvature of the face was first semi-circular in cross-section and that it was gradually changed to two convex planes. This change formed a rounded ridge, running parallel with the perforation. The finally designed specimens show that these two planes became more and more flattened. Thus those which are highly developed are considerably less in thickness than those underdeveloped. Therefore, the ultimate designs can easily be identified from the blending forms by

PLATE 113.

Cross-sectional drawings of the patterns that comprise the Concave Humped Group, arranged in a sequence to illustrate their construction and evolution of design.

noting the construction of the two planes of the face which form a rather sharp ridge running parallel to the perforation.

The most highly developed type specimen so far observed is shown in Plate 115, under No. 4. An end view is also illustrated, and shows that the two flat planes of the face are set at an angle of about 105 degrees. Note that the side walls of the perforation are exceptionally thin and fragile.

Plate 113 shows the evolution of this group by a series of cross-sectional drawings. It is very difficult to describe the construction of the back of a highly developed type specimen. But the cross-sectional drawings clearly shows the construction of these patterns.

There seems to have been no special material adopted for the making of the ultimate designs. Because of the fact that these objects are so rare, one may believe that they were made prior to the time when certain selected materials were adopted for the making of highly developed banner-stones in general. The few type specimens encountered were made of miscellaneous materials including banded-slate, granite, and lime-stone. These were found in the state of Ohio, lower Indiana, and southern Michigan. Thus one can believe that this group reached its highest development within this territory.

The writer has failed to find any of the ultimate designs belonging to this group illustrated or described in any publication. Therefore, he has taken the liberty to classify this type group and give it a name. It is hoped that the name adopted will be accepted and will be regarded as very appropriate for the patterns. The plates accompanying this article permit one to study the evolution of this group, even though only a small number of specimens are shown. These objects are exceedingly rare.

EXPLANATION OF PLATE 114

CONCAVE HUMPED GROUP

Blending Forms of Various Materials from the Middle Mississippi Valley Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—Jefferson County, Missouri. Material, dark green granite, finely speckled with black. Hollow reed drilling just started. *From the author's collection*

No. 2—Wayne County, Missouri. Material, green and white spotted granite, discolored from age. Found in 1885. Hollow reed drilling, 1 1/2 inches deep. *From the author's collection*

No. 3—Garland County, Arkansas. Material, gray mottled granite. Found about 1918 while tearing down an old house in the town of Hot Springs. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 4—Clinton County, Indiana. Material, yellow quartzite. The dark mottled areas are rich brown in color, and were caused from iron oxides in the ground. Hollow reed drilling 1/2 inch deep. Catalogue number 641. *From the author's collection*

No. 5—Will County, Illinois. Material, straw color granite marked with black. Hollow reed drilling just started. *From the author's collection*

No. 6—End view of No. 5.

No. 7—End view of No. 2.

No. 8—End view of No. 3.

No. 9—End view of No. 1.

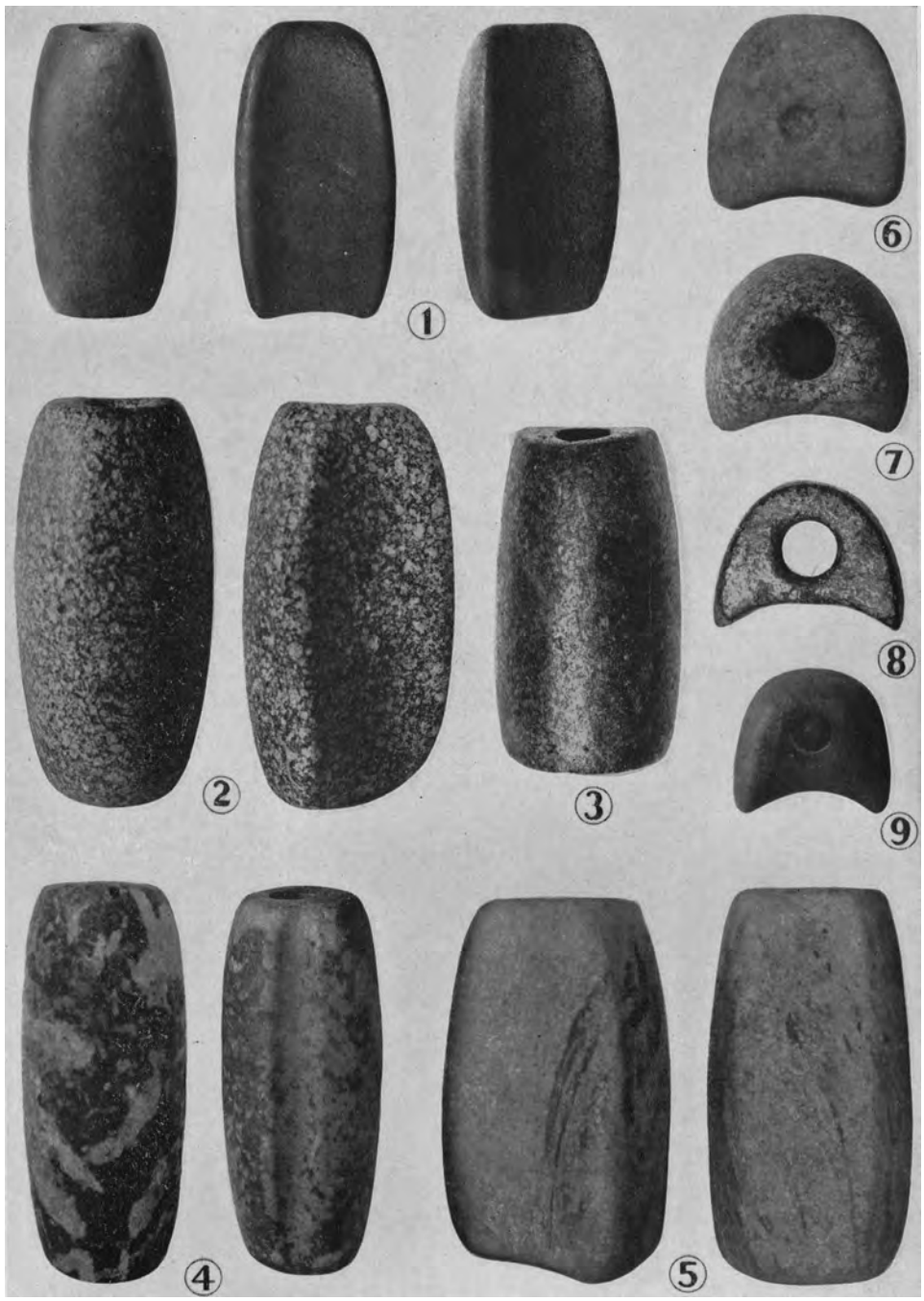


PLATE 114

EXPLANATION OF PLATE 115

CONCAVE HUMPED GROUP

Blending Forms and Types No. 2 of Various Materials from the Middle Mississippi and Lower Ohio Valley Areas

CLASS B AND C SPECIMENS

Plate 2/5 actual size

No. 1—HAMILTON COUNTY, INDIANA. Material, banded-slate. Catalogue number 63. Acc. 14. Class B specimen.
Indiana Historical Museum collection, Indianapolis, Indiana

No. 2—GREENE COUNTY, INDIANA. Material, white quartzite, discolored from age. Catalogue number 385. Acc. No. 14. Class B specimen.
Indiana Historical Museum collection, Indianapolis, Indiana

No. 3—BERRIEN COUNTY, MICHIGAN. Material, green banded-slate. Found in Buchanan Twp. near the banks of the St. Joseph River in 1936. Class C specimen.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 4—GREENE COUNTY, INDIANA. Material, limestone. Found in Jefferson Twp. This is a most highly developed type specimen so far observed by the author. Catalogue number 1. Acc. No. 78. Class C specimen.
Indiana Historical Museum collection, Indianapolis, Indiana

No. 5—PEORIA COUNTY, ILLINOIS. Material, hard greenish-gray banded-shale. Hollow reed drilling one inch deep. Size 5 1/2 x 2 3/4 x 2 1/2 inches. This is the largest type specimen observed by the author. Class C specimen.
From the author's collection

No. 6—KENTUCKY, County unknown. Material, white and tan veined translucent quartz. Class B specimen. *Phillip C. Schupp collection, Chicago, Illinois*

No. 7—WAYNE COUNTY, OHIO. Material, banded-slate. Hollow-reed drilling one-half inch deep. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

On the right side of this illustration is shown the end views of No. 1, 2, 3, 4, 7.

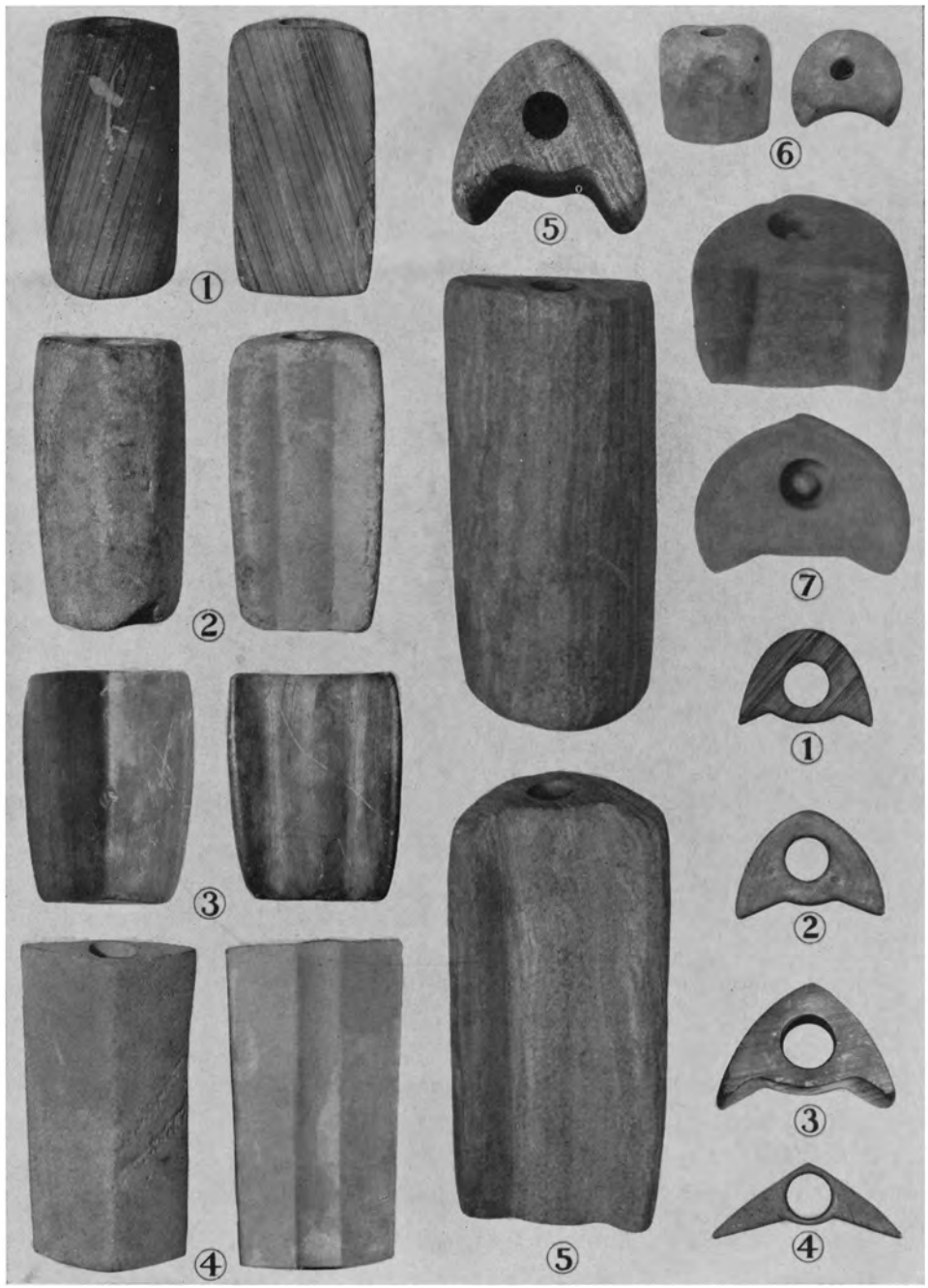


PLATE 115

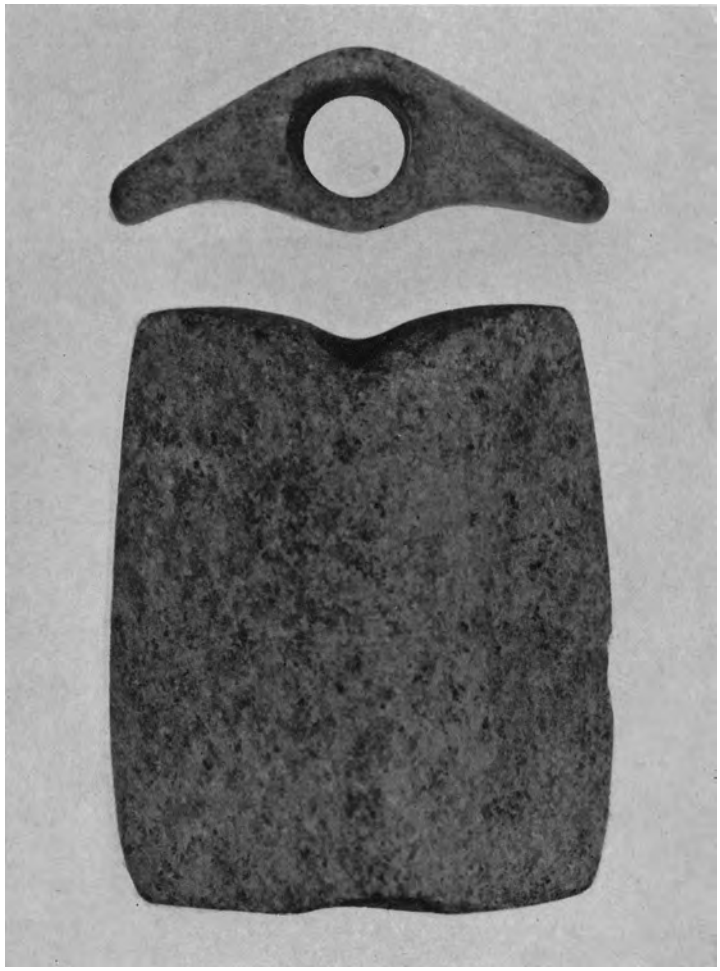


PLATE 116.

Eastern Ohio, County unknown. Material, mottled granite. This object can be classified as a Concave Humped type. Acc. No. 110/118.

The upper picture shows an end view.

The lower picture shows the ridged face. Plate actual size.

THE OHIO STATE ARCHAEOLOGICAL SOCIETY COLLECTION, COLUMBUS, OHIO

SHIELD-SHAPE GROUP

TYPE No. 3

These particular patterns have been referred to in a number of publications only as being "short-winged," and also "bipennate" banner-stones. Apparently this group has never been named. Like many other groups a definite terminology by which to identify them had never been established. This situation was very confusing.

The terms, "short-winged" and "bipennate," are meaningless when used as a name for a particular type group. It is true that the patterns that comprise this group are short-winged and are also of bipennate construction. Yet the term short-winged can be associated with many other differently designed groups of banner-stones which also have short wings. Furthermore, the term bipennate only signifies that the two wings correspond, whether short or long. Therefore, it seems very necessary to adopt a more definite name for this group by which it can be identified. The writer has adopted the name *Shield-shape* because the general outline of the great majority of the specimens, and particularly those that are the ultimate designs, resemble the shape of a shield, similar to many of those used by the knights who lived in the medieval times.

According to an analysis of the lines and planes of the *Shield-shape* patterns, one will find that there exists no relationship between this group and that of the *Notched Crescent Group*, which also occur in the New England Area. It is very apparent that the *Shield-shape* patterns developed through evolution from the *Southern Humped Primary Form No. 1*. Judging from the great number of blending forms found within the New England Area, one may believe that this group had developed there.

The most interesting feature of the specimens that comprise this group is their constructional differences. The blending forms are of *single-face* construction, and the type specimens are of *bi-face* construction. After

(Continued on Page 252)

EXPLANATION OF PLATE 117

SHIELD-SHAPE GROUP

Single-face Blending Forms of Various Materials from the New England Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—Burlington County, New Jersey. Material, spotted slate. Found near the town of Morrestown. Catalogue number 26.
Dorothy E. Middleton collection, Morrestown, N. J.

No. 2—Camden County, New Jersey. Material, steatite. Found near the town of Camden. Catalogue number 12.
Dorothy E. Middleton collection, Morrestown, N. J.

No. 3—Luzerne County, Penn. Cast. Material of original argillite. Negative number 4304B-324897.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 4—Gloucester County, New Jersey. Material, steatite. Negative number 6/6931.
Museum of the American Indian, Heye Foundation, New York, N. Y.

No. 5—Connecticut, County unknown Material, slate. Plate 3. Catalogue number T/108. *American Museum of Natural History, New York, N. Y.*

No. 6—Middlesex County, Connecticut. Material, indurated clay-stone. Catalogue number 44. *From the author's collection*

No. 7—New York, County unknown. Material, dark red indurated clay-stone.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 8—Burlington County, New Jersey. Material, probably steatite. Catalogue number 6/7274.
Museum of the American Indian, Heye Foundation, New York, N. Y.

No. 9—Ingham County, Michigan. Material, banded-slate. Catalogue number 619.
Dr. B. J. Moss collection, East Tawas, Michigan

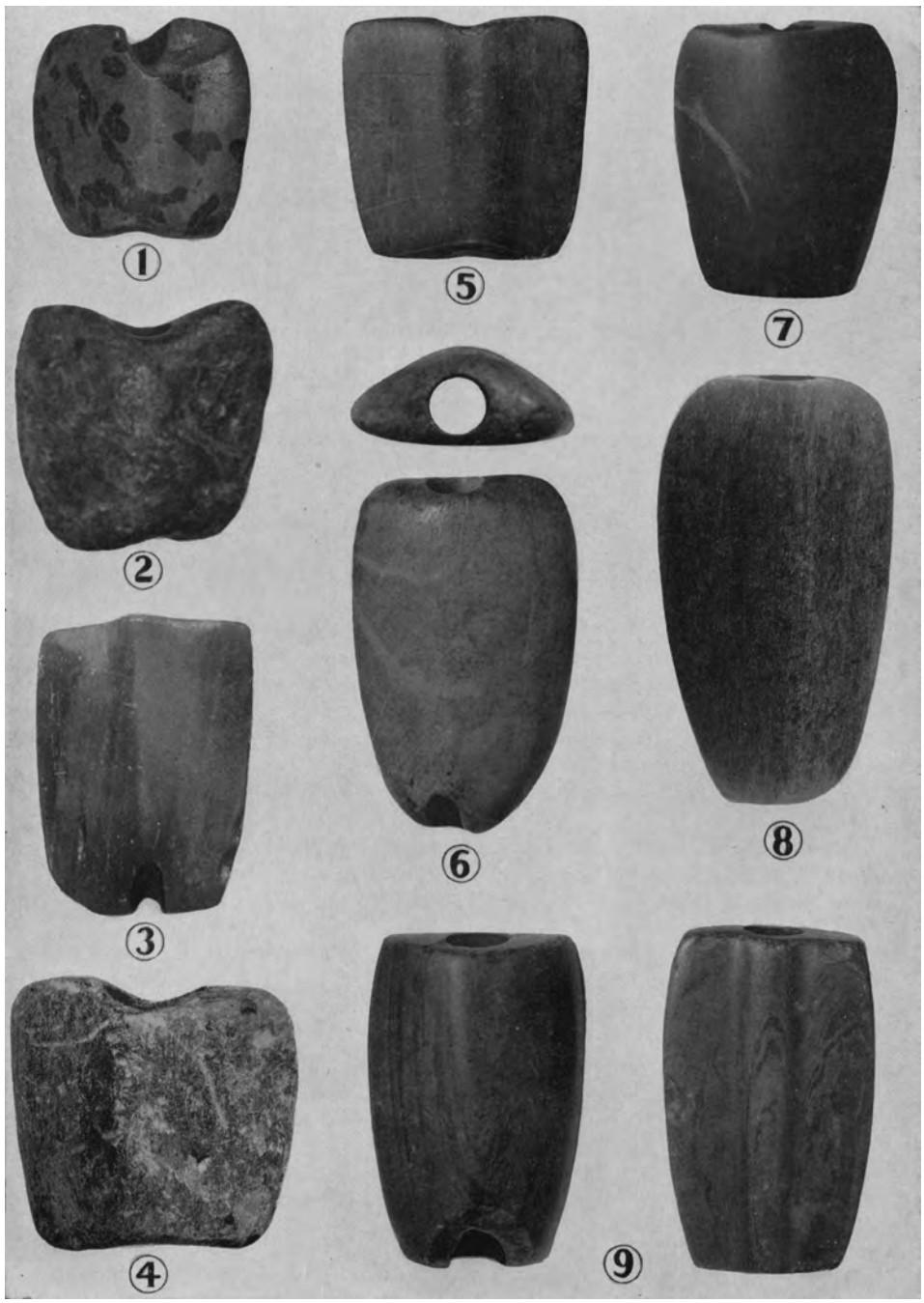


PLATE 117

EXPLANATION OF PLATE 118

SHIELD-SHAPE GROUP

Single-face Blending Forms and Bi-face Types No. 3 from the New England Area

CLASS B AND C SPECIMENS

Plate 2/5 actual size

No. 1—MASSACHUSETTS, County unknown. Material, slate. Plate 2. Catalogue number D/K.664. Class C specimen
The American Museum of Natural History, New York, N. Y.

No. 2—TOLLAND COUNTY, CONNECTICUT. Material, green slate. Catalogue number 2168. Class C specimen. *L. C. Snyder collection, Lacona, New York*

No. 3—MASSACHUSETTS, County unknown. Material, black slate. Negative number 63591. Class C specimen.
Peabody Museum of Harvard University collection, Cambridge, Mass.

No. 4—CAMDEN COUNTY, NEW JERSEY. Material, probably slate. Found near Big Timber Creek. Negative number 6/6394. Class C specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 5—NEW YORK, County unknown. Material slate. Negative number A4836. Blending form. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Mass.

No. 6—SCHOHARIE COUNTY, NEW YORK. Material, probably slate. Negative number 24581.D-6209. E. Jewett Case No. 18. Blending form. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 7—MASSACHUSETTS, County unknown. Material, slate. Plate 2. Catalogue number D/H/642. Blending form. Class C specimen.
The American Museum of Natural History, New York, N. Y.

No. 8—MASSACHUSETTS, County unknown. Material, granite-like stone. Catalogue number 53349. Class C specimen.
Peabody Museum of Harvard University collection, Cambridge, Mass.

No. 9—LANCASTER COUNTY, PENN. Material, dark gray slate. Catalogue number 17. Class C specimen. *John Maffenbeir collection, Newark, New Jersey*

No. 10—TIOGA COUNTY, NEW YORK. Material, probably slate. Found four miles southeast of Owogo. Catalogue number 4642. Class C specimen.
Joseph J. Quinlan collection, Dansville, New York

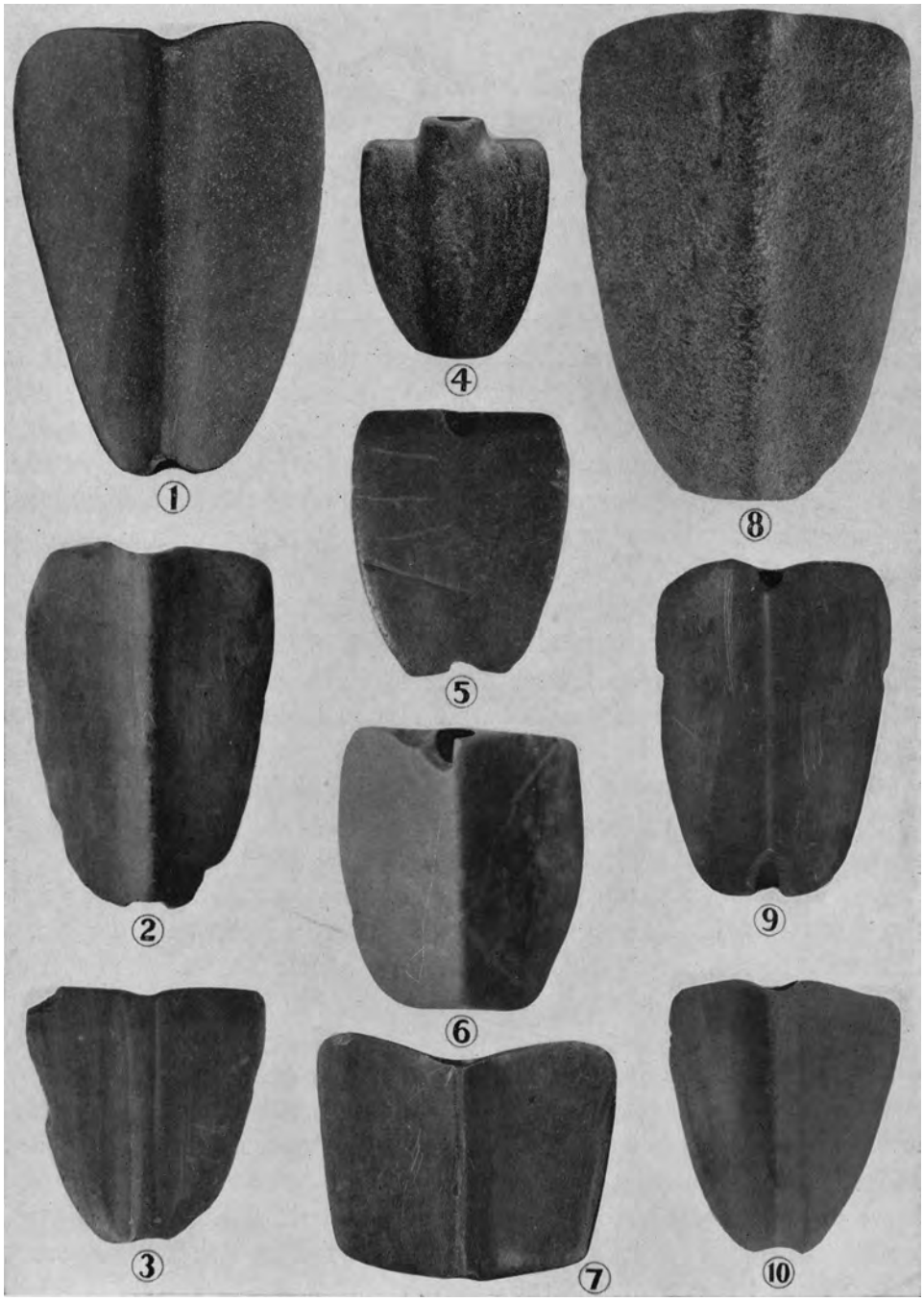


PLATE 118

PRIMARY FORM BLENDING FORM TYPE

PLATE 119.

Cross-sectional drawing of the patterns that comprise the Shield-shape Group, arranged in a sequence to illustrate their construction and evolution of design.

a comparison is made of the designs of these particular specimens, one can observe that there exists an evolutionary relationship, even though they do show a constructional difference. The early designed *single-face* patterns with thick wings were gradually changed in construction to thin winged patterns, which were then transformed into the *bi-face* patterns. These later designed *bi-face* designs are classified as the type specimens. This evolutionary development is illustrated by a series of cross-sectional drawings in Plate 119.

The materials used for the making of the specimens of this group are usually the same as those used for the making of the other groups found within the New England Area. These materials include various slates, steatite, clay-stone, and trap rock, all of which are rather unattractive. These materials probably carried no ceremonial or spiritual meaning.

A number of primary forms, blending forms, and type specimens are shown in the accompanying plates. By observing the diversity of shapes of those illustrated, one can follow the evolution of this group.

All of the objects shown in Plate 117 are blending forms, and of *single-face* construction. The construction of the specimen shown under No. 6 can easily be studied by the two views, one of the face and the other of the end.

The most highly developed types observed are shown in Plate 118, under No. 1 and No. 8. Both of these objects are exceptionally large, and are of *bi-face* construction. There are probably even larger type specimens in many of the eastern collections, but it is an arduous task to locate them. It is very regretful that there were not more pictures secured so that these patterns could have been better represented. There are, however, a sufficient number of *single-face* and *bi-face* variations shown to permit one to study the evolution of the design.

TRIANGULAR GROUP

TYPE No. 4

The simplicity of the design of the *Southern Humped Primary Form No. 1* is described in the article on the *Humped Group*. In this same article is also mentioned the possibility that this design may be the oldest of the eight primary forms. Yet, after one studies the lines and planes of the *Southern Triangular Primary Form No. 2*, it is discovered that the design is also very simple. Therefore, it is a problem to determine which of these two patterns is the simplest in construction, and, as far as their origin is concerned, which design preceded the other.

Frequently some of the *Humped* and *Triangular* primary forms show slight variations of shape to the extent that the two designs seem to merge together. It is rather difficult to come suddenly to a definite decision while attempting to solve the question concerning a prospective relationship between these two early made designs. Whether or not they can be associated with each other or were developed independently is difficult to say.

It may be well to describe these variations in an attempt to solve this problem. Frequently the curvature of the face of some of the *Humped* primary forms was slightly changed from a true semi-circular cross-sectional construction to a more angular shape.

Occasionally the face of some of the *Triangular* primary forms which usually have two flat planes that form a sharp ridge was slightly changed to a more rounded ridge. Regardless of the fact that these two primary designs may seem to merge together, there is still no reason to believe that each design was not developed independently. There are far too many of each of these two differently designed patterns found within the Primary Area to believe otherwise.

From this early made and simply shaped *Triangular* primary form developed six differently designed types which occur within the Mississippi Valley. Although the design of each of these types is highly specialized,

there still is present to a certain extent the characteristic features of the lines and planes of the original *Triangular* primary forms. Thus by this similarity of construction the evolution of each type can be observed.

The *Triangular* primary forms are probably the most common patterns found within the Primary Area. Usually they are made of steatite, of various colors including tan, gray, and black, and more rarely of unattractive granite materials. A number of these early made objects are shown in Plate 121. It is very interesting to note that several of those shown in this plate are broken at the ends. These breaks were made by the inserted staffs. The pressure that caused the breaks had come from inside the perforations, and this is the reason why the breaks expand to the outside surface of the stone.

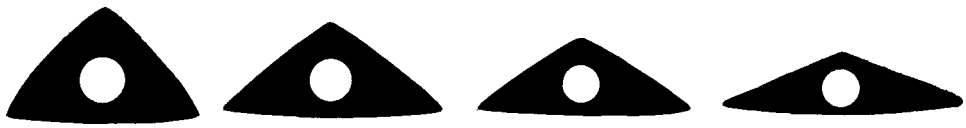
The blending forms are distributed throughout the Middle Mississippi Valley Area. The greatest number, however, occur in the western half of Tennessee and Kentucky. By observing those that are found there, the travel route which the prehistoric Indians had taken from the Primary Area can be followed in a northwesterly direction. The blending forms are usually made of speckled or spotted granite materials.

Occasionally specimens are also noted which are made of limestone, spotted quartzite, and other materials. Those made of these materials are restricted mainly to the southern half of Indiana and the western part of Ohio. Some of these patterns show a shallow depression on the face, leaving a small ridge running across the face of both ends.

The type specimens occur in the Upper Mississippi Valley Area, extending approximately from the mouth of the Missouri River north into southern Wisconsin. They are made of no other material but beautifully spotted granite and porphyry, which was carefully selected. Apparently these varieties of stone were adopted for some ceremonial purpose.

The type specimens are the only ultimate designs developed from the *Triangular* primary forms which are still more or less identical in shape. All the other five types which were also developed from the same simply shaped primary form had undergone many changes. Therefore, each of these five types is entirely different in design.

Because the lines and planes of the patterns which are regarded as types are so similar in design to those of the primary forms, the question may arise as to the probability that these specimens are nothing more than



PRIMARY FORM BLENDING FORMS TYPE

PLATE 120.

Cross-sectional drawing of the patterns that comprise the Triangular Group, arranged in a sequence to illustrate their construction and evolution of design.

under-developed forms. It may also be rather difficult for many to comprehend how these patterns can be classified by the *A, B, C system*. The writer had been confronted with this problem for many years but is now fully convinced that they comprise an independent type group.

The reason why these patterns comprise a type group can easily be explained. It has been discovered that the specimens found in the Upper Mississippi Valley Area show a higher degree of development than those found farther south. Usually they are much larger in size, show finer workmanship, and are made of more beautiful material. It has also been noted that the specimens regarded as types are considerably less in thickness than the blending forms found farther south. Therefore, this group of banner-stones can be classified by the *A, B, C system* by noting the locality in which they are found and also by their difference in thickness.

Plate 120 shows a series of pen-and-ink cross-sectional drawings of the differently designed patterns that comprise the *Triangular* type group. These drawings illustrate the evolution of this design by showing that the blending forms are less in thickness than the primary forms and the types are still thinner than the blending forms. It is only necessary to refer to the chapter, *Banner-Stones from Red Paint Burials found near the Illinois River*, to prove that the *Triangular* patterns from the Upper Mississippi Valley Area are highly developed. The two specimens described, one a *Triangular*, the other a *Wisconsin Winged* pattern, show superb workmanship and were made in the later phase of the Banner-stone Era.

The writer, however, was fully convinced even before this discovery was made that the *Triangular* patterns from the Upper Mississippi Valley Area should be classified as types. But this discovery of these two banner-stones in a single mound, and each of a different type design, proves that the classification which the writer had adopted is correct.

EXPLANATION OF PLATE 121

TRIANGULAR GROUP

Triangular Primary Forms No. 2 of Various Materials from the Primary Area

CLASS A SPECIMENS

Plate 1/2 actual size

No. 1—GEORGIA, County unknown. Material, spotted diorite. Perforation absent. Plate 1. Catalogue number 20.0/851. *The American Museum of Natural History collection, New York, N. Y.*

No. 2—GEORGIA, county unknown. Material, mottled diorite. Perforation absent. Plate 1. Catalogue number 20.0/852. *The American Museum of Natural History collection, New York, N. Y.*

No. 3—GEORGIA, County unknown. Material, granite. Perforation Absent. Plate 1. Catalogue number 2/4612. *The American Museum of Natural History collection, New York, N. Y.*

No. 4—GEORGIA, County unknown. Material, brown soapstone. Plate 1. Catalogue number 2/5109. *The American Museum of Natural History collection, New York, N. Y.*

No. 5—GEORGIA, County unknown. Material, altered diabase. Plate 1. Catalogue number 2/4613. Note the one end broken away, caused apparently by the insertion of the staff. *The American Museum of Natural History collection, New York, N. Y.*

No. 6—GEORGIA, County unknown. Material, brown serpentine. Plate 1. Catalogue number 2/4887. *The American Museum of Natural History collection, New York, N. Y.*

No. 7—GEORGIA, County unknown. Material, serpentine. Plate 1. Catalogue number 2/5110. *The American Museum of Natural History collection, New York, N. Y.*

No. 8—GEORGIA, County unknown. Material, serpentine. Plate 1. Catalogue number 2/2722. *The American Museum of Natural History collection, New York, N. Y.*

No. 9—GEORGIA, County unknown. Material, serpentine. Plate 1. Catalogue number 2/3587. *The American Museum of Natural History collection, New York, N. Y.*

No. 10—GEORGIA, County unknown. Material, serpentine. Plate 1. Catalogue number 2/148. The end view is diamond-shape, therefore, it is a bi-face specimen. Note the encised lines. *The American Museum of Natural History collection, New York, N. Y.*

No. 11—GEORGIA, County unknown. Material, altered porphyry. Plate 1. Catalogue number 20.0/696. Bi-face specimen. *The American Museum of Natural History collection, New York, N. Y.*

No. 12—GEORGIA, County unknown. Material, diorite. Plate 1. Catalogue number 2/1661. *The American Museum of Natural History collection, New York, N. Y.*

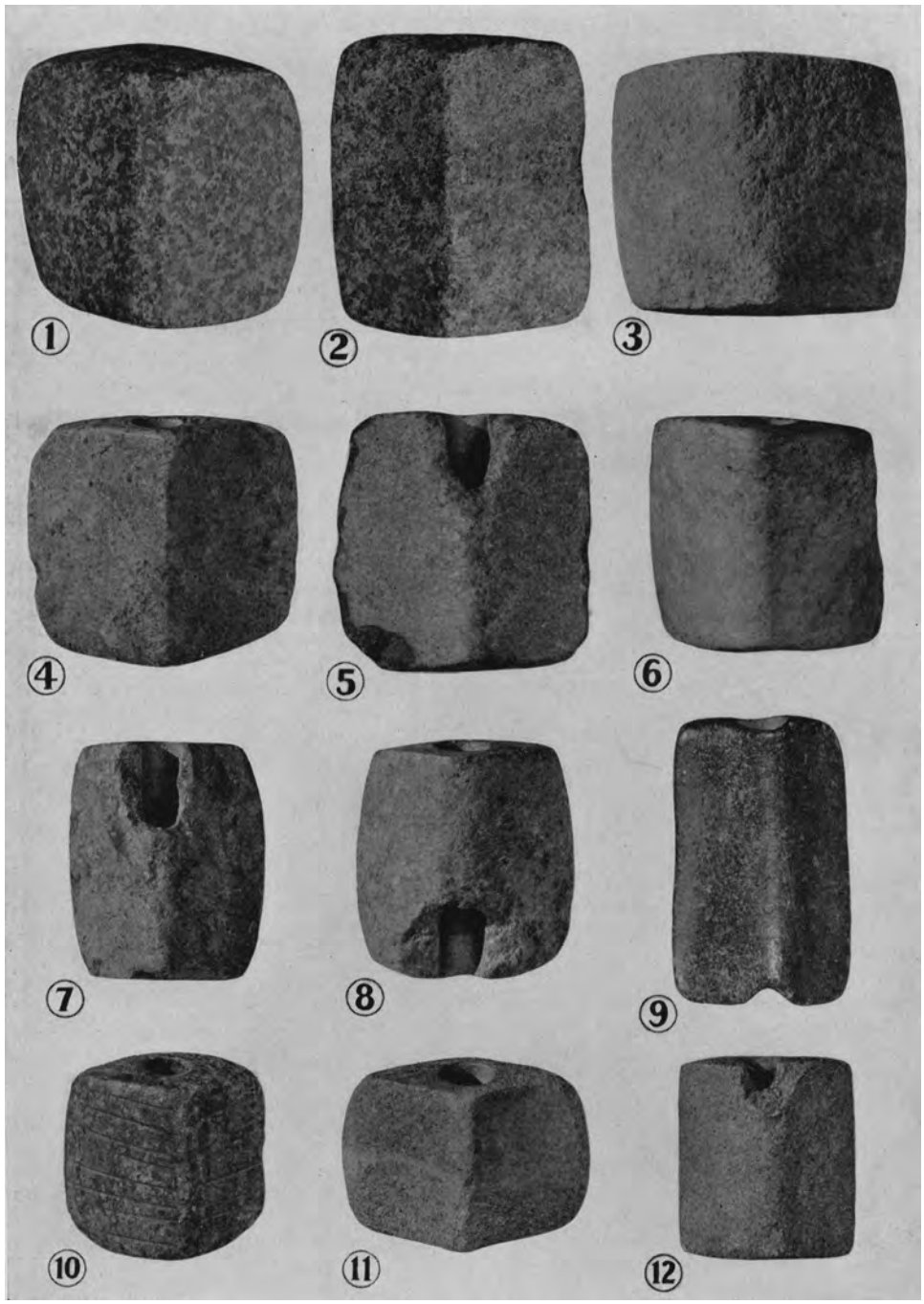


PLATE 121

EXPLANATION OF PLATE 122

TRIANGULAR GROUP

Triangular Primary Forms No. 2 and Blending Forms from the Primary and Middle Mississippi Valley Areas

CLASS A AND B SPECIMENS

Plate 5/8 actual size

No. 1—Richmond County, Georgia. Material, brick red granite, impregnated with iron, showing small white specks. Undrilled. Size 2 3/8 x 2 3/8 inches. Class A specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 2—Pike County, Illinois. Material, mottled granite. No evidence of drilling. Class A specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 3—Hancock County, Ohio. Material, black and white spotted porphyry. Solid stick drilling just started. Size 2 x 2 1/2 inches. Class A specimen. *From the author's collection*

No. 4—Jackson County, Illinois. Material, brown ferruginous striped slate. Found on the surface on the McGuire farm in 1930. The light stripes are badly disintergrated. Class B specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 5—Jackson County, Illinois. Material, black and white wiry granite. Size 2 1/4 x 2 1/4 inches. Class B specimen. *From the author's collection*

No. 6—Locality unknown. Probably lower Indiana. Material, black and white granite Class B specimen. *E. W. Payne collection, Springfield, Illinois*

No. 7—Ripley County, Missouri. Material, brown ferruginous slate, showing no bands. Size 1 3/4 x 2 1/4 inches. Class B specimen. *From the author's collection*

No. 8—Hamilton County, Ohio. Material, black and white spotted granite, discolored yellow from age. This specimen is interesting because of the fact the sides are convex, therefore, it is a blending form of the Single-face Bottle Group. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 9—Fulton County, Georgia. Material, black steatite. Size 2 x 2 1/4 inches. 1 inch in thickness. Class A specimen. *From the author's collection*

No. 10—Locality unknown. Probably southern Illinois. Material, white clouded quartz. The flat back is shown in this picture. Class B specimen. *E. W. Payne collection, Springfield, Illinois*

No. 11—Atchison County, Missouri. Material, data unobtained. *E. W. Payne collection, Springfield, Illinois*

No. 12—Edgefield County, South Carolina. Material, gray steatite. Note the broken out end caused apparently by pressure of the staff. Size 1 3/4 x 2 1/8 inches. Class A specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

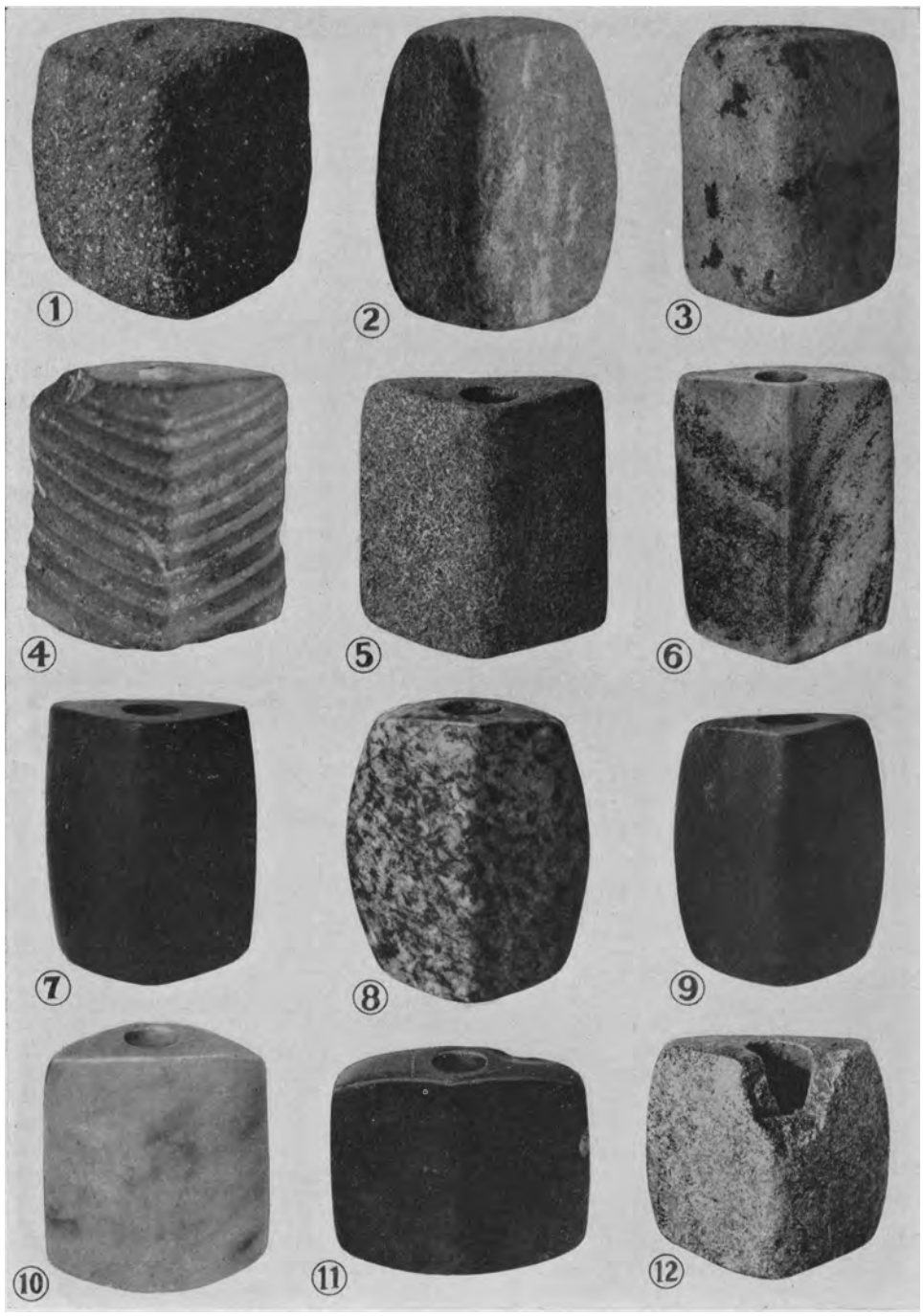


PLATE 122

EXPLANATION OF PLATE 123

TRIANGULAR AND HOUR-GLASS GROUPS

Triangular and Hour-glass Blending Forms of Various Materials from the Middle Mississippi Valley Area

CLASS B SPECIMENS

Plate 5/7 actual size

No. 1—VAN BUREN COUNTY, MICHIGAN. Material, light limestone, highly polished, and discolored tan from age. Catalogue number 60. *From the author's collection*

No. 2—CRAWFORD COUNTY, INDIANA. Material, bluish-gray and white clouded quartzite, spotted with black. *Sprague Chambers collection, Kalamazoo, Michigan*

No. 3—TRUMBULL COUNTY, OHIO. Material, white limestone, disintegrated and discolored from age. Catalogue number 48. *From the author's collection*

No. 4—FRANKLIN COUNTY, MISSOURI. Material, ferruginous banded clay-stone. Because the side edges of this specimen is concave it is a Hour-glass blending form. Catalogue number 39. *From the author's collection*

No. 5—VERMILLION COUNTY, ILLINOIS. Material, banded-slate. Found in Middlefork Twp. Because the side edges of this specimen is concave it is a Hour-glass blending form. *C. C. Benedict collection, Decatur, Illinois*

No. 6—POSEY COUNTY, INDIANA. Material, bluish-gray and white, mottled quartzite, specked with black. *B. W. Stephens collection, Quincy, Illinois*

No. 7—HILLSDALE COUNTY, MICHIGAN. Material, banded-slate. Hour-glass Group. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—POSEY COUNTY, INDIANA. Material, ferruginous slate. The four indentations on the face of the specimen were made by hollow-reed drilling The writer has observed only two specimens of this kind ornamented in this fashion. The back of the specimen is also ornamented with four indentations. *E. L. Renno collection, St. Charles, Missouri*

No. 9—BOONE COUNTY, MISSOURI. Material, ferruginous slate. Because of the fact the side edges are convex, this specimen belongs to the Single-face Bottle Group. *Dr. P. F. Titterington, St. Louis, Missouri*

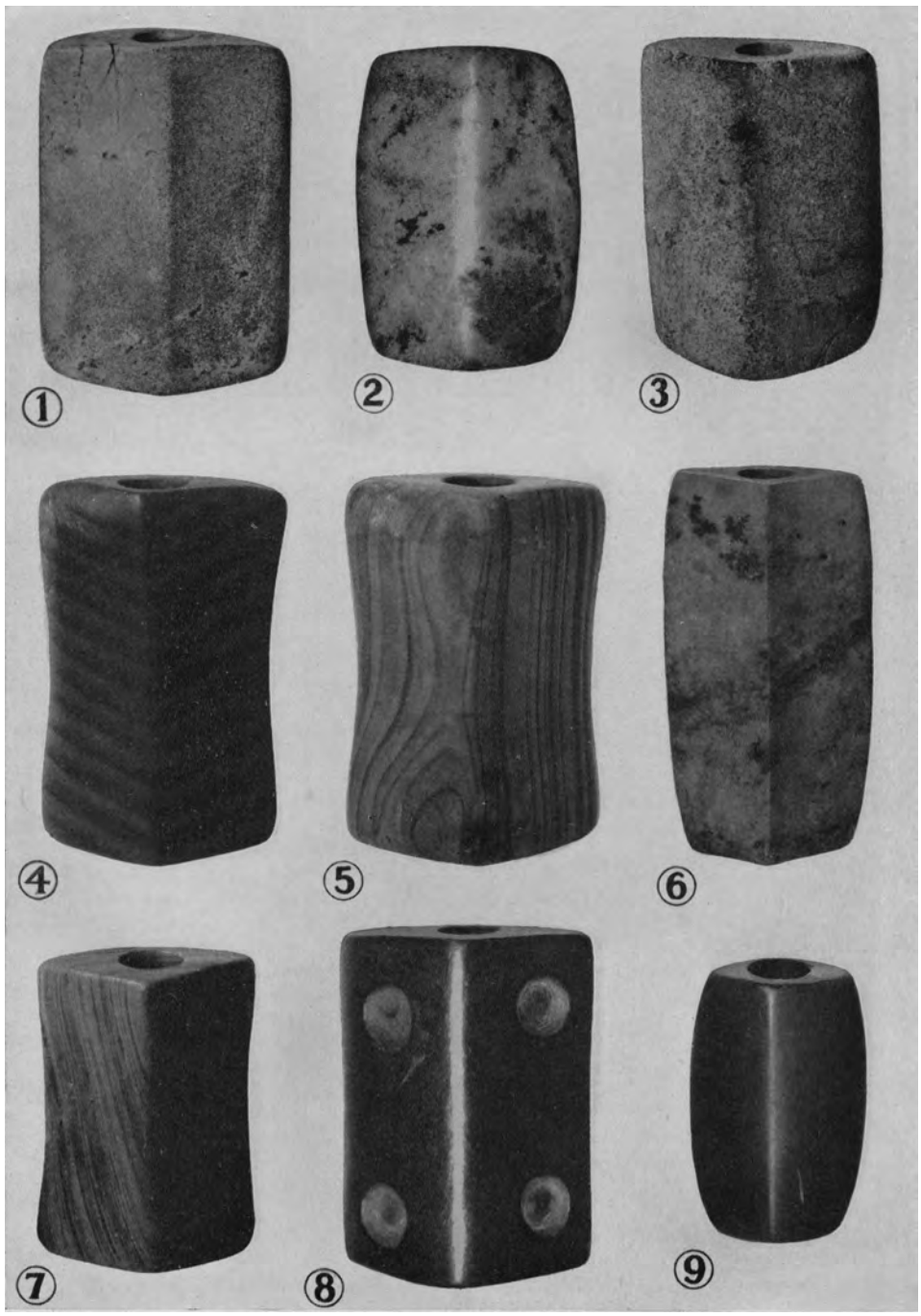


PLATE 123

EXPLANATION OF PLATE 124

TRIANGULAR GROUP

Triangular Primary and Blending Forms of Various Materials from the Middle Mississippi Valley Area

CLASS A AND B SPECIMENS

Plate 1/2 actual size

No. 1—KENTUCKY, County unknown. Material, lime stone, badly disintegrated. This specimen may be classed as a Southern Primary Form No. 1. Class A specimen.
From the author's collection

No. 2—Locality unknown. Material, black and light gray spotted granite. Incompleted hollow reed drilling. This specimen may be a primary form from the Southern Area. Class A specimen. *L. C. Snyder collection, Lacona, New York*

No. 3—ADAMS COUNTY, ILLINOIS. Material, black and white spotted granite. Hollow reed drilling just started. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

No. 4—PIKE COUNTY, ILLINOIS. Material, black and white streaked and speckled quartzite. Class B specimen. *Ben Neusbaum collection, Fairbury, Illinois*

No. 5—HUMPHREYS COUNTY, TENNESSEE. Material, red hematite. Found near the Cumberland River. Class B specimen. *F. P. Hills collection, Delaware, Ohio*

No. 6—CALHOUN COUNTY, ILLINOIS. Material, red banded clay-stone. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

No. 7—WARREN COUNTY, OHIO. Material, green banded-slate. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

No. 8—WHITE COUNTY, ILLINOIS. Material, white quartz. Found near the Little Wabash River. Class B specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 9—MONTGOMERY COUNTY, INDIANA. Material, green banded-slate. This specimen may be classified as a Saddle-face blending form. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

No. 10—PEORIA COUNTY, ILLINOIS. Material, black and tan mottled quartz. Both planes of the face of the specimen are slightly concaved. Class B specimen.
Sprague Chambers collection, Kalamazoo, Michigan

No. 11—MARION COUNTY, MISSOURI. Material, green and white porphyry. This specimen probably could be classified as a Triangular Type No. 4. Class C specimen.
B. W. Stephens collection, Quincy, Illinois

No. 12—JEFFERSON COUNTY, INDIANA. Material, feldspatic stone. Found at Cooper's Bar, near Madison. Negative No. 24581A-98026. R. G. Spangler, case No. 18.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

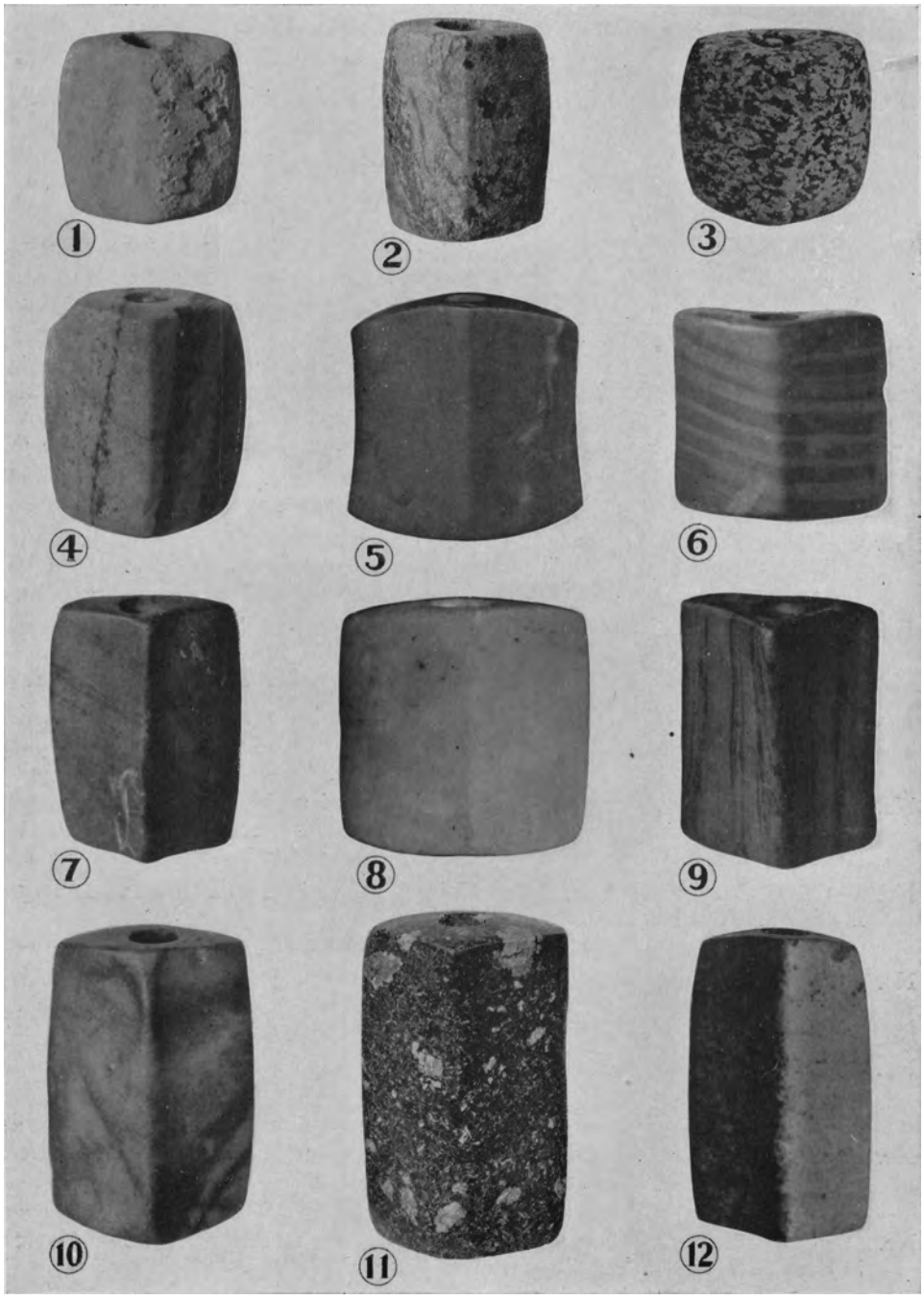


PLATE 124

EXPLANATION OF PLATE 125

TRIANGULAR GROUP

Blending Forms and Types No. 4 of Various Quartz Materials from the Lower Ohio Valley Area

CLASS B AND C SPECIMENS

Plate 1/2 actual size

No. 1—CLARK COUNTY, INDIANA. Material, white quartz spotted with black, highly polished. Found in Jeffersonville Twp. Catalogue number 3. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 2—CLARK COUNTY, INDIANA. Material, white quartz spotted with black, highly polished. Note that the face of this specimen is slightly depressed leaving a rounding rim on each end. Found in Jeffersonville Twp. Catalogue number 2. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 3—CLARK COUNTY, INDIANA. Material, light gray quartz mottled with black, highly polished. Found in Jeffersonville Twp. Catalog number 4. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 4—CLARK COUNTY, INDIANA. Material, gray quartz mottled with black, surface polished. Found in Jeffersonville Twp. Catalogue number 6. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 5—CLARK COUNTY, INDIANA. Material, white quartz, speckled with brown. Found in Jeffersonville Twp. Catalogue number 1. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 6—CLARKE COUNTY, INDIANA. Material, gray granite-like quartz, mottled with shades of brown. Found in Jeffersonville Twp. Catalogue number 9. Acc. No. 218. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 7—CLARK COUNTY, INDIANA. Material, black and white mottled quartz, highly polished. Found in Jeffersonville Twp. Catalogue number 824. Acc. No. 119. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 8—CLARK COUNTY, INDIANA. Material, black and white mottled quartz. Catalogue number 5. Acc. No. 218. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 9—CLARK COUNTY, INDIANA. Material, light bluish gray quartz finely speckled with black, highly polished. Catalogue number 8. Acc. No. 218. Class B specimen. *Indiana Historical Society collection, Indianapolis, Ind.*

No. 10—CLARK COUNTY, INDIANA. Material, light gray quartz mottled with brown, highly polished. Catalogue number 33. Acc. No. 219. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 11—SPENCER COUNTY, INDIANA. Material, quartz, mottled with brown and black. Catalogue number 60. Acc. No. 21. Class B specimen. *Indiana Historical Society collection, Indianapolis, Ind.*

No. 12—CLARK COUNTY, INDIANA. Material, gray quartz mottled with brown. Found in Jeffersonville Twp. Catalogue number 40. Acc. No. 219. Class B specimen. *Indiana Historical Society collection, Indianapolis, Ind.*

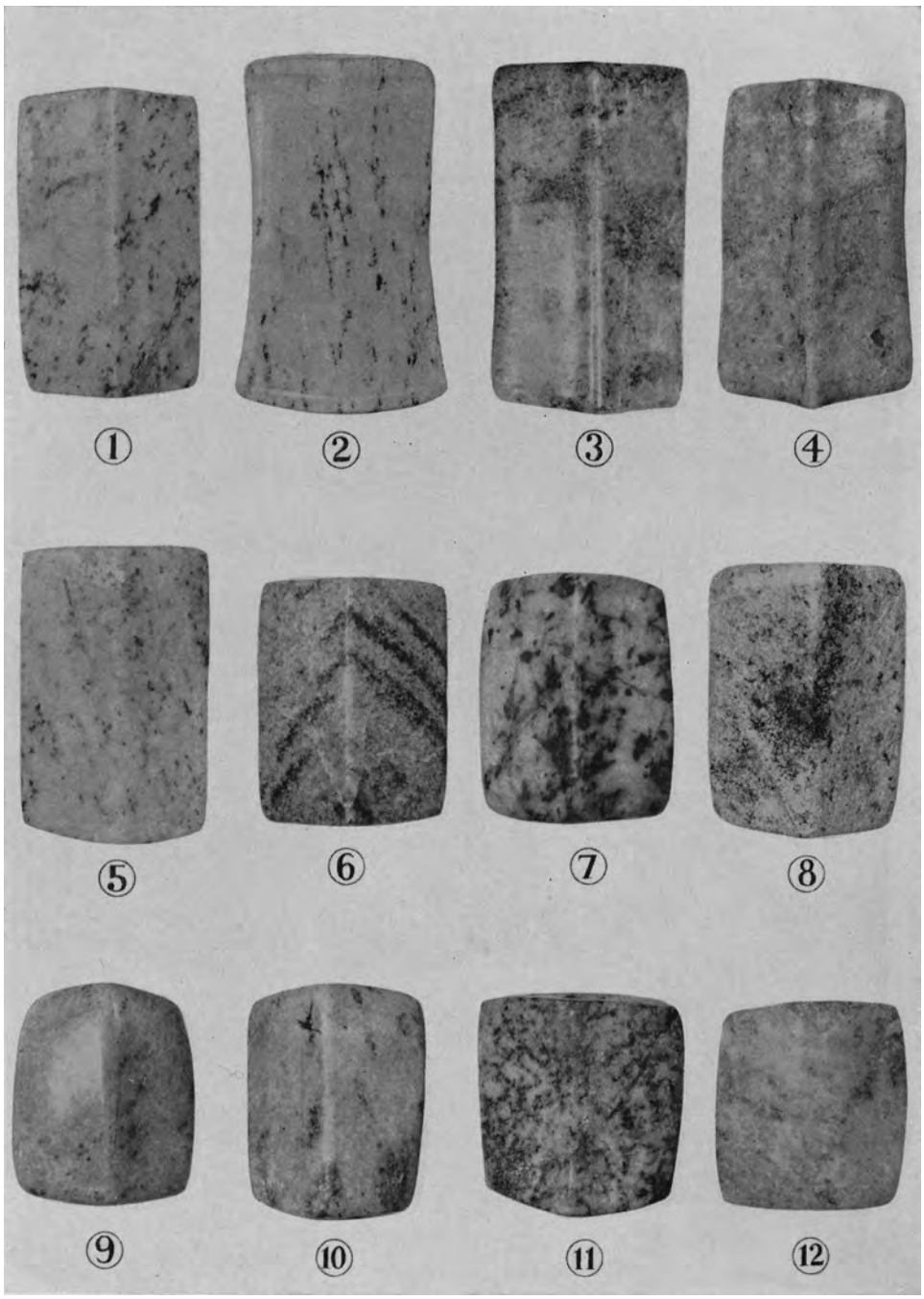


PLATE 125

EXPLANATION OF PLATE 126

TRIANGULAR GROUP

Triangular Types No. 4 of Various Spotted Granites from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 5/8 actual size

No 1—KNOX COUNTY, KENTUCKY. Material, light gray and black speckled granite.
Philip C. Schupp collection, Chicago, Illinois

No 2—MONTGOMERY COUNTY, ARKANSAS. Material, light brown and gray speckled granite. Found on the surface about 100 yards east of the dam on Caddo River.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 3—ADAMS COUNTY, ILLINOIS. Material, black and white spotted granite, discolored brown from age. Hollow reed drilling two inches deep. Formally in the E. W. Payne collection. *From the author's collection*

No. 4—JERSEY COUNTY, ILLINOIS. Material, dark gray and white speckled granite, discolored tan from age. Solid stick drilling just started on each end.
From the author's collection

No. 5—VERNON COUNTY, WISCONSIN. Material, dark gray and white porphyry. Found near the town of Viroqua. Catalogue number 59. *From the author's collection*

No. 6—FULTON COUNTY, ILLINOIS. Material, greenish black granite, marked with white.
B. W. Stephens collection, Quincy, Illinois

No. 7—SULLIVAN COUNTY, MISSOURI. Material, black and white spotted granite, highly polished. Found near the town of Galt in 1895. Catalogue number 58.
From the author's collection

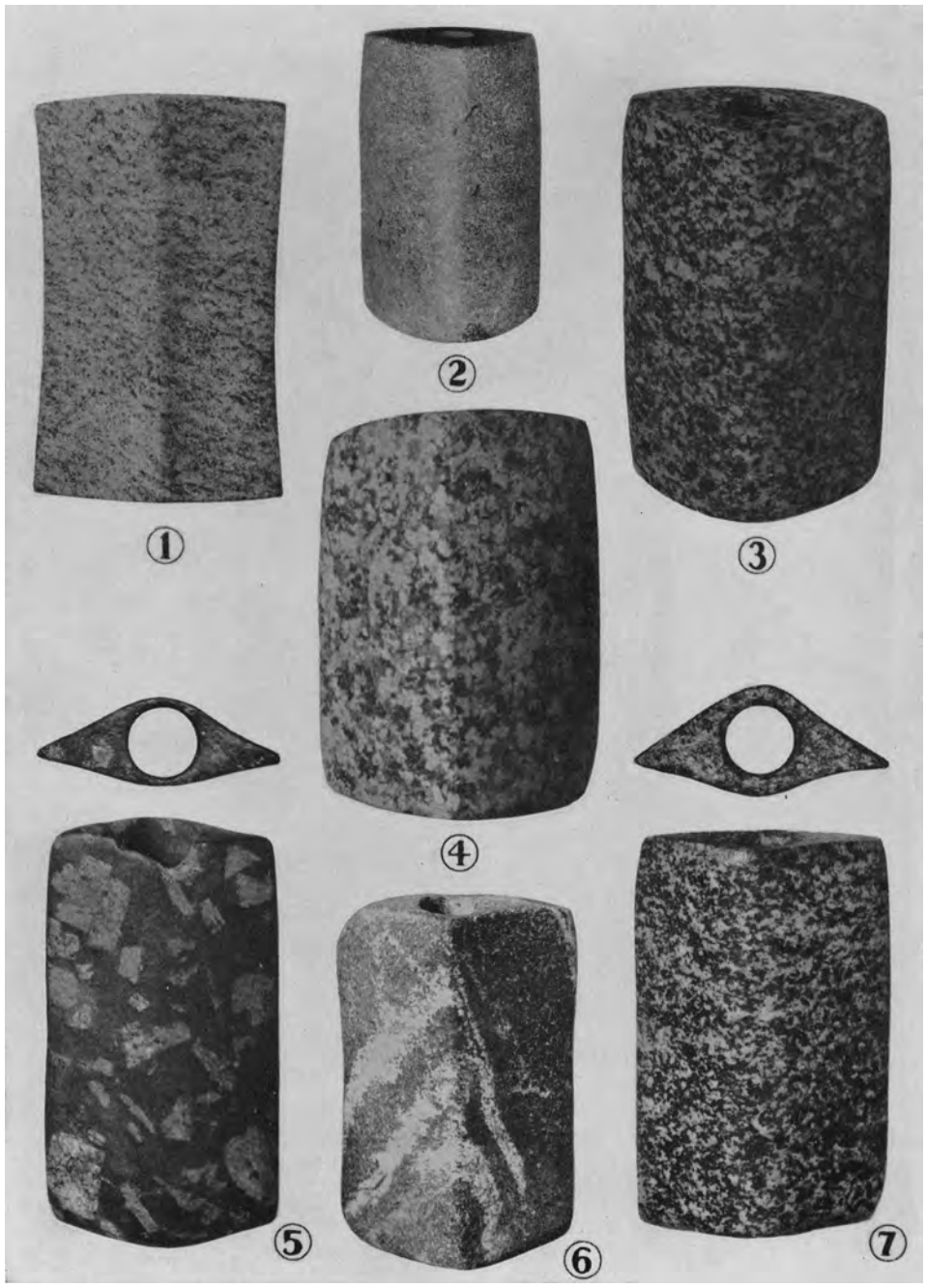


PLATE 126

PLATE 127.

Brown County, Illinois. Material, black and gray quartz. Tablet, taken from the burial described by the article *The Second Discovery* in the chapter *Banner-stones from Red Paint Burials found near the Illinois River.*

Plate 7/8 actual size. FROM THE AUTHOR'S COLLECTION

TRIANGULAR (DUAL TYPE) GROUP

TYPE No. 5

The reason this type group was named *Triangular (dual-type)*, is that the remarkable specimens which comprise it have the characteristic features of two differently designed classified patterns. The lines and planes of the face of the *Triangular (dual type)* ultimate designs are identical to those of the *Triangular* types No. 4. The back of the *Triangular (dual-type)* patterns is very similar in construction to that of the *Wisconsin Winged* patterns. There is a raised rectangular area running through the middle of these objects, their full length parallel with the perforation.

Occasionally the writer had observed these curiously designed objects in a number of collections in the Middle Mississippi Valley Area. The majority of those encountered proved later to be only under-developed forms. Many were unfinished. Most of these specimens were photographed because of their rareness and are now illustrated in the accompanying plates. Naturally the banner-stones of this design were previously unclassified and thus had no name. Furthermore, the writer has failed to note any mention or picture of these patterns in any book.

But before these objects could be classified, it was necessary to discover their source or origin to solve their evolution. This could be done only by locating some of the more simply designed patterns, which would be the earliest made designs. It was also necessary to locate the highest specialized or ultimate designs. Both of these designs were totally lacking. Therefore, this complex situation created a hard problem to solve. But later it was solved very easily and rather unexpectedly.

The writer must admit, prior to the time that the Payne collection was placed upon the market for sale, he had not observed a single highly developed specimen of this design which he felt could be regarded as a type. He was positive that such patterns existed and could be found, even though he had searched for them many years.

In this collection, to his surprise, were discovered two beautifully made specimens which unmistakably could be classified as types. Both were made of carefully selected spotted granite material. They were both found in the Cohokia Mound district in the state of Illinois. These two rare types are illustrated in Plate 130.

The blending forms and also the types of this group were now discovered. The next problem was to find the so-called missing link which was the origin of these newly discovered patterns. The writer believed that there must exist some cruder and more simply designed patterns which were responsible for the development of this group. He was very confident that the missing link could be found in the Primary Area because of the fact that the origin of all other banner-stones can be traced to this common center.

A thorough search was made for the missing link in the Payne collection by searching through all of the material from the southern states. The search proved to be very successful. Two remarkable examples of early made and crudely designed dual-type patterns were discovered. One specimen, which was labeled Georgia, was badly disintegrated and shows great age. The other specimen was labeled Aiken County, South Carolina. Both of these rare objects are illustrated in Plate 129 under Nos. 1 and 2.

By the finding of these two early made patterns from the Primary Area, the evolution of this type group could now be established. There was still another problem to solve before one could classify these objects into an independent type group. It was necessary to discover the origin of those early designed.

These curiously designed patterns were finally arranged in the *Banner-Stone Tree of Evoution* as being developed from the *Southern Triangular Primary Form No. 2* for several reasons. It is very evident that the so-called missing link patterns had the characteristic features of two primary forms, the *Southern Triangular Primary Form No. 2*, and the *Southern Rectangular Primary Form No. 5*. It was noted that the face of the early designed dual-type patterns is related to the *Triangular* primary forms and the back is related to the *Rectangular* primary forms. For this reason this type group was named *Triangular (dual-type)*.

It is very plausible that the *Triangular* primary forms were made prior to the making of the *Rectangular* primary forms because of the fact that

PLATE 128.

Cross-sectional drawing of the patterns that comprise the Triangular (dual type) Group, arranged in a sequence to illustrate their construction and evolution of design.

the later is a far more complicated design. Therefore, one may conclude that the design of the *Triangular (dual-type)* was developed still later.

If this theory is true the *Triangular (dual-type)* patterns are nothing more than *Triangular* patterns to which were added, on their back plane, the construction of *Rectangular* primary forms. This observation serves as the reason why this group seems to be more closely related to the *Triangular* primary forms than to any other.

After establishing the origin of the early designed (dual-type) or so-called missing link specimens in this manner, it was discovered that they are blending forms belonging to this group. Furthermore, their design is far too complicated or advanced to be classified as an independent primary form.

Plate 128 shows a series of pen-and-ink cross-sectional drawings which show the evolution of this group. By these drawings the change of construction can be followed from the *Triangular* primary form to the types.

The travel route, which the Indians who made these patterns had taken, can be followed from the Primary Area northwest to the Middle Mississippi Valley Area. This route is very similar to the route taken by the Indians who made the *Triangular* patterns.

From the location where the type specimens occur, one notes this group had reached its highest development within the Middle Mississippi Valley Area. Whether or not other types have been found or will be found in the Upper Mississippi Valley Area is difficult to say. There is no reason for one not to believe that these objects were carried there.

Because of the extreme rarity of the type specimens, one can regard them as being probably one of the rarest designs of all banner-stones. It is hoped that the name selected for this group will be accepted and regarded as appropriate.

EXPLANATION OF PLATE 129

TRIANGULAR (DUAL-TYPE) GROUP

Blending Forms of Various Materials from the Primary and Middle Mississippi Valley Areas

CLASS B SPECIMENS

Plate 5/12 actual size

No. 1—GEORGIA, County unknown. Material, wiry granite, badly disintegrated from age, and discolored brown from the iron in the ground in which it lay. Hollow reed drilling 1 1/2 inches deep. The picture on the left is the face, the picture on the right is the back. *From the author's collection*

No. 2—AIKEN COUNTY, SOUTH CAROLINA. Material, fine grained granite, showing a heavy coat of patina. The picture on the left is the face, the picture on the right is the back. *E. W. Payne collection, Springfield, Illinois*

No 3—ST. GENEVIEVE COUNTY, MISSOURI. Material, green and white spotted granite. Drilling just started. The picture on the left is the face, the picture on the right is the back, and above is shown an end view.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 4—CASS COUNTY, ILLINOIS. Material, black and green spotted granite. Found about 1887, one and one-half miles southwest of Chandlerville. No evidence of drilling the perforation. The picture on the left is the face, the picture on the right is the back, and above is shown an end view. *Claude U. Stone collection, Peoria, Illinois*

No. 5—TENNESSEE, County unknown. Material, dark gray steatite. Found in 1894. The three pictures of this specimen show the face, back, and end view.
E. L. Renno collection, St. Charles, Missouri

No. 6—CLARK COUNTY, INDIANA. Material, mottled quartz. Found in 1920 near the Ohio River. This specimen may be classified as a Triangular (dual-type) blending form. Class B Specimen. *F. P. Hills collection, Delaware, Ohio*

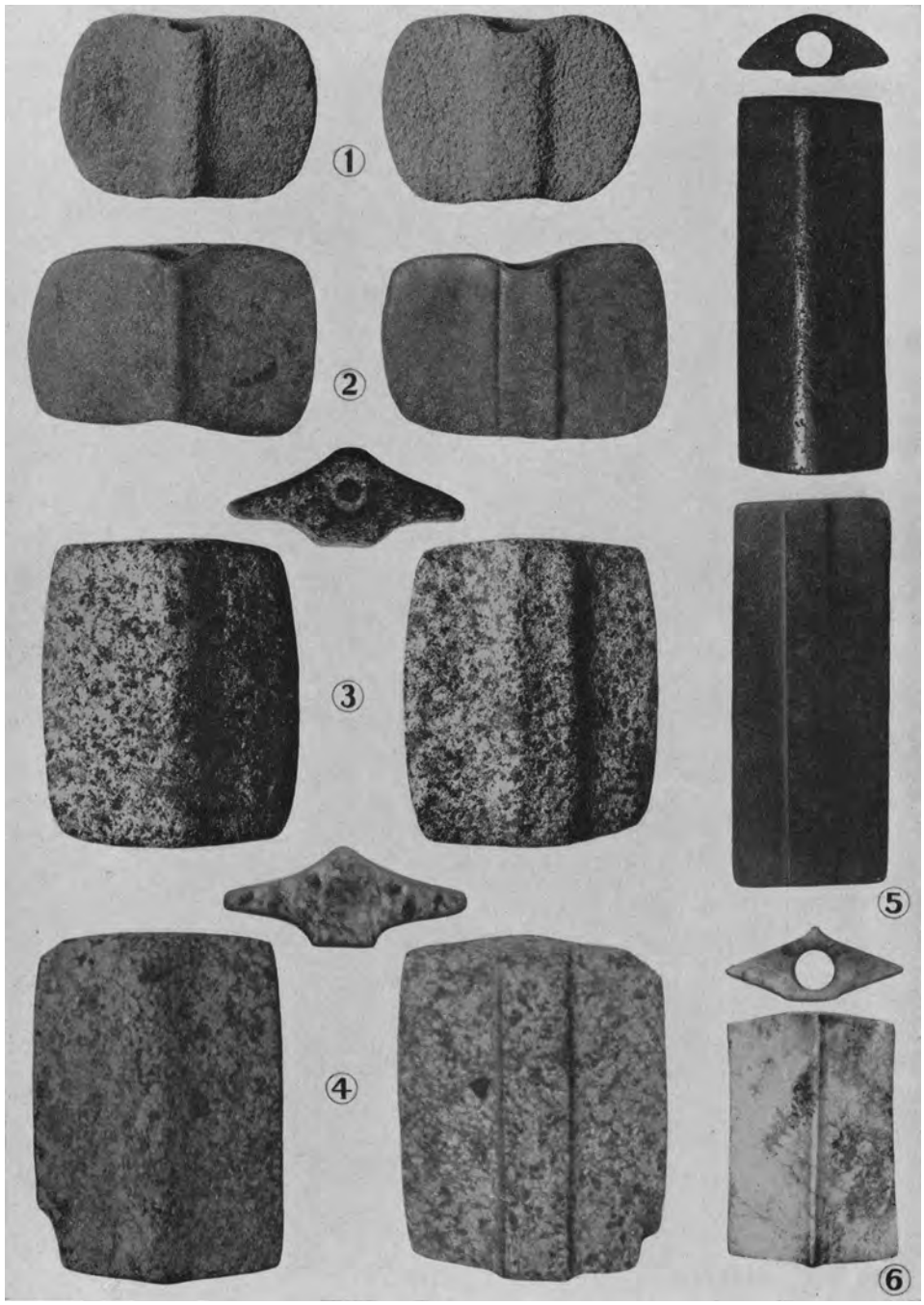


PLATE 129

EXPLANATION OF PLATE 130

TRIANGULAR (DUAL-TYPE) GROUP

Types No. 5 of Spotted Granite from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—CALHOUN COUNTY, ILLINOIS. Material, black and white spotted granite. Discolored tan from age. Size 3 5/8 x 2 1/4.

The picture on the left shows the face.

The picture on the right shows the back.

The above picture is an end view to show the construction of these hightly developed type specimens. Formerly in the E. W. Payne collection.

Sprague W. Chambers collection, Kalamazoo, Michigan

No. 2—CALHOUN COUNTY, ILLINOIS. Material, dark green and white spotted granite. The white Feldspar crystals are discolored yellow from age. The surface is highly polished. Size 4 inches x 2 1/2 inches.

The picture on the left shows the face.

The picture on the right shows the back.

The above picture is an end view to show the construction of these highly developed type specimens. Formerly in the E. W. Payne collection.

These two specimens and the one shown in Plate 131 are the only highly developed type specimens so far observed by the author.

From the author's collection

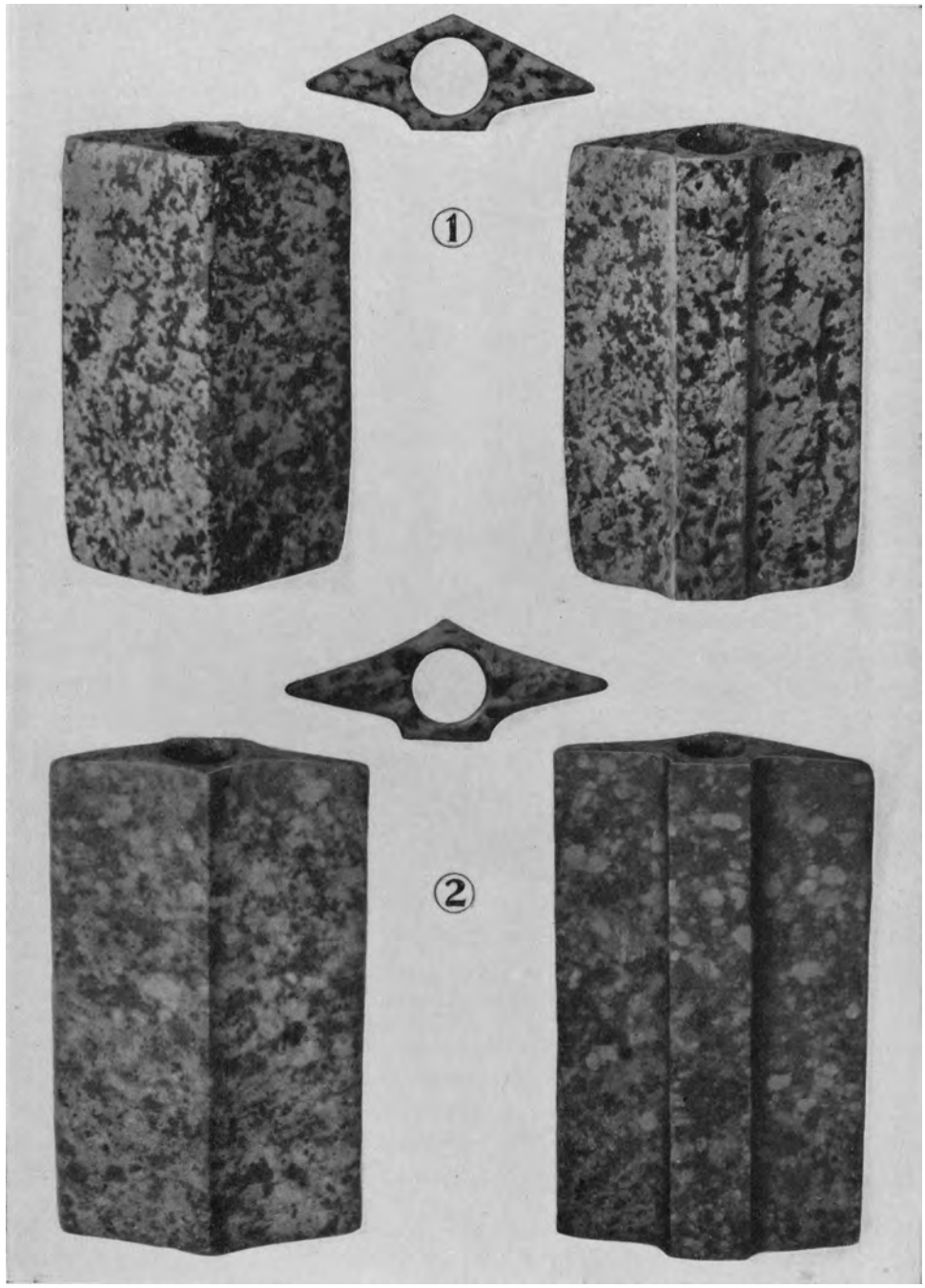


PLATE 130

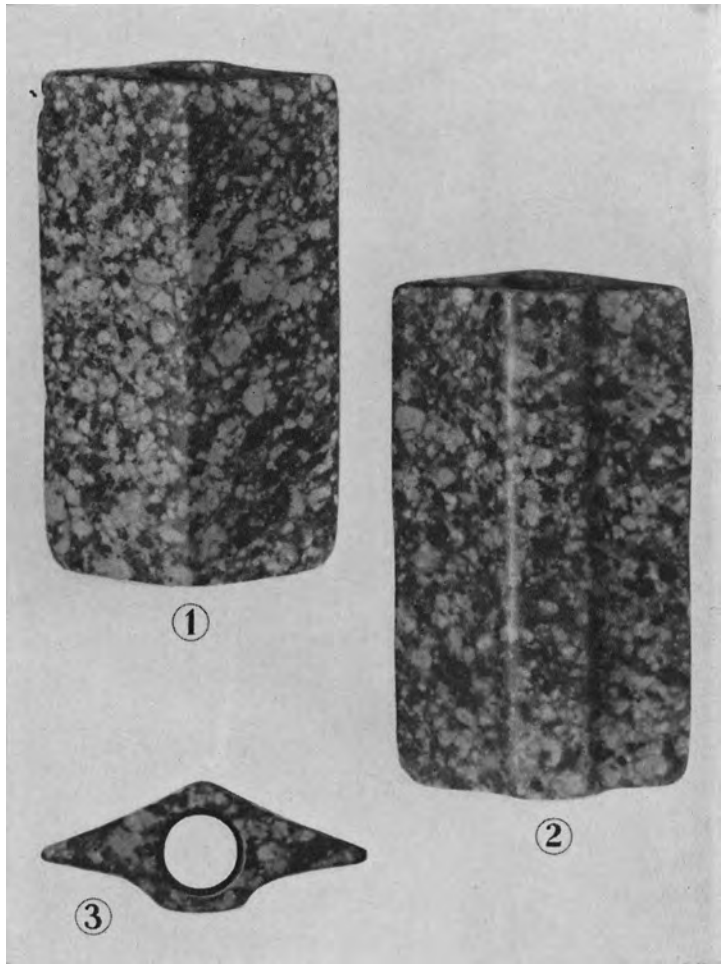


PLATE 131. Richland County, Illinois. Material, black and white spotted granite, discolored yellow from age. This highly specialized Triangular (dual type) specimen was found in the spring of 1938 in a corn field near the town of Noble. These objects are very rare.

No. 1—This view shows the face, which has two flat planes.

No. 2—This view shows the back, which has a raised reinforced area.

No. 3—This view shows the end, and its construction.

Plate 5/6 actual size.

LESTER L. FIELDS, COLLECTION, CHICAGO, ILLINOIS

HOURGLASS GROUP
TYPE No. 6

The term *Hour-glass* has been used as a name to classify these patterns for many years. The name is quite appropriate for the design; hence there is no need to change it.

The *Hour-glass* patterns occur throughout the entire Mississippi Valley extending from the lower into the upper area. The ultimate designs or types are probably the most abundant of all type patterns found within this enormous territory. Yet, these specimens which are made of beautiful ferruginous quartz material are considered by collectors as being quite rare.

This group developed from the *Southern Triangular Primary Form No. 2*. The same characteristic features of the construction of this simply designed primary form are still apparent on the blending forms and also the types, even though the general outline of these objects was changed. The most noticeable change in the design of the simpler forms is the concave side edges of the higher developed patterns.

The blending forms occur throughout the Middle Mississippi Valley Area. They are probably most abundant in the western half of Tennessee and Kentucky. These patterns are made of various materials, usually including limonite, banded clay-stone, ferruginous slate, banded-slate, limestone, plain and spotted granites, and variously colored quartzites. But rarely are *Hour-glass* specimens found which show under-developed lines, that are made of ferruginous quartz.

The ultimate designs or types are only made of this beautiful translucent or semi-translucent ferruginous quartz. But, occasionally, type specimens are noted which are made of red opaque quartz. It is very evident that when this design became highly developed, this material (ferruginous quartz) was adopted to add to the ceremonial significance of the *Hour-glass* patterns. Thus, by noting those made of this material one can easily separate the blending forms from the types.

(*Continued on Page 288*)

EXPLANATION OF PLATE 132

HOUR-GLASS GROUP

Blending Form of Various Materials from the Lower Ohio and Middle Mississippi Valley Areas

CLASS B SPECIMENS

Plate 5/8 actual size

No. 1—Locality unknown. Material, ferruginous banded clay-stone. Probably found in the Lower Ohio Valley Area.
Con Foster Museum collection, Traverse City, Michigan

No. 2—BUTLER COUNTY, MISSOURI. Material, ferruginous striped slate. Found in a grave on the bank of Black River near Poplar Bluff.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 3—HEMPSTEAD COUNTY, ARKANSAS. Material, dark brown ferruginous quartzite. Found on the surface of Oscar Cox place near Washington in 1921. Some years ago Mr. R. Harrington of the Museum of the American Indian opened a mound on the Cox place. Catalogue number Z-3. Size 2 1/4 x 2 1/2 inches.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 4—ADAMS COUNTY, ILLINOIS. Material, white translucent quartz with pale pink spots. Found near the town of Quincy. Size 2 1/8 x 3 1/8 inches.
Dr A. W. Pendergast collection, Fairbury, Illinois

No. 5—PERRY COUNTY, INDIANA. Material, white quartz, showing veins and small spots of dark rusty color. The back is flat, the end view is triangular. Collected by the author. Size 2 1/8 x 3 1/4 inches.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 6—FRANKLIN COUNTY, KENTUCKY. Material, white translucent quartz clouded with shades of tan. Found near the town of Frankford. Size 2 1/4 x 3 1/8 inches.
From the author's collection

No. 7—DOUGLAS COUNTY, ILLINOIS. Material, white sugar quartzite, discolored from age Found in Arcola Township. *C. C. Benedict collection, Decatur, Illinois*

No. 8—YELL COUNTY, ARKANSAS. Material, dark gray quartzite. Plowed up on John Chambers farm near Berckman Lake, two miles south of Belleville in 1931. Size 2 1/8 x 3 inches. Catalogue number Z-31.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 9—WILLIAMSON COUNTY, ILLINOIS. Material, red striped ferruginous slate. Found on the surface near Wolf Creek, a tributary of the Saline River in the southeast part of this county in 1909. Size 2 x 2 3/8 inches. An end view is shown above.
Irvin Peithman collection, Carbondale, Illinois

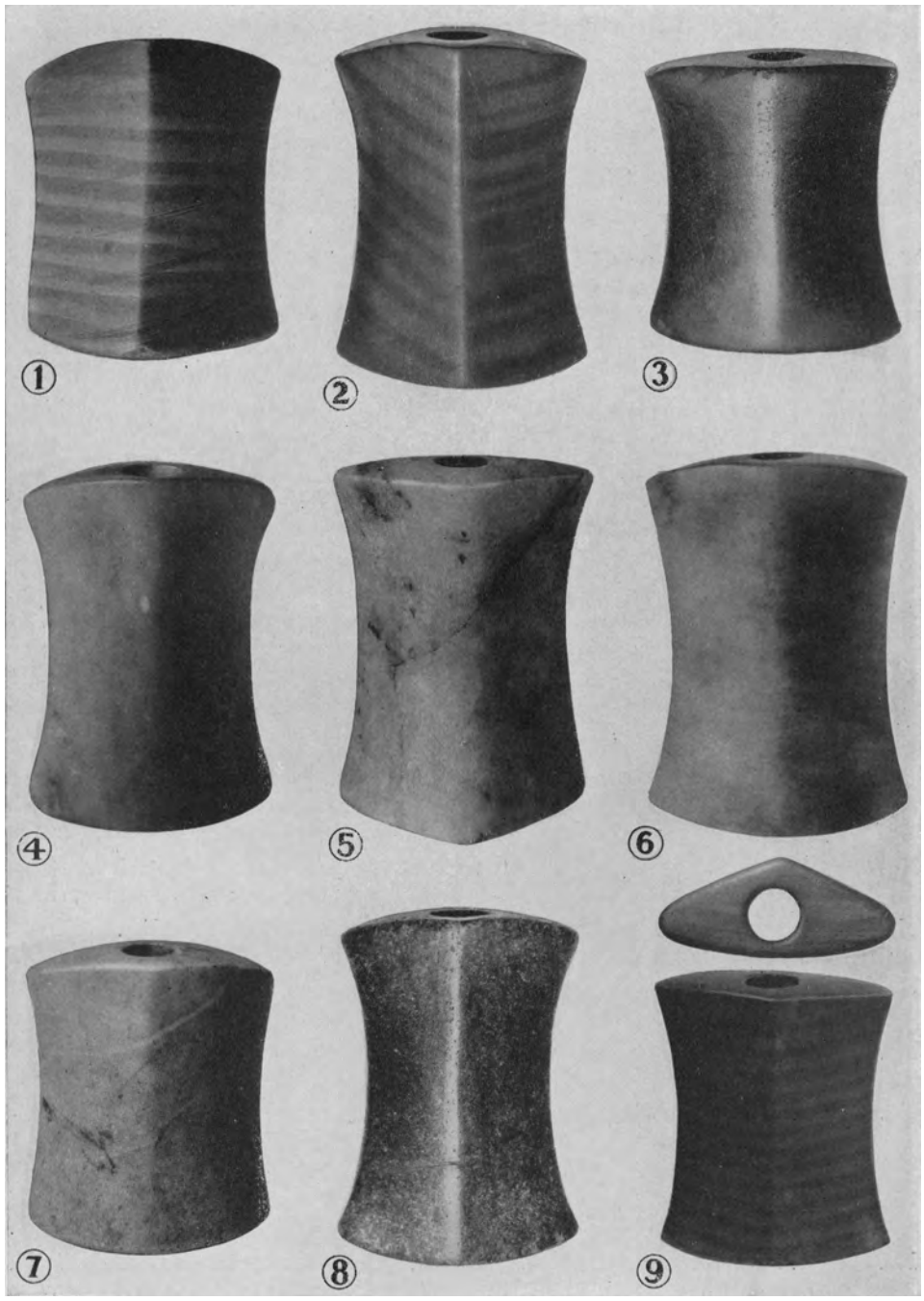


PLATE 132

EXPLANATION OF PLATE 133

HOUR-GLASS GROUP

Blending Forms and Types No. 6 of Various Materials from the Middle Mississippi Valley Area

CLASS B AND C SPECIMENS

Plate 5/12 actual size

No. 1—WILLIAMSON COUNTY, ILLINOIS. Material, ferruginous quartz. Found near Crab Orchard Creek. Class B specimen.
Irvin Peithman collection, Carbondale, Illinois

No. 2—FULTON COUNTY, ILLINOIS. Material, ferruginous quartz. Class C specimen.
E. L. Renno collection, St. Charles, Missouri

No. 3—KENTUCKY, (county unknown). Material, ferruginous quartz. This is a bi-face specimen, because both sides are convex. Class C specimen.
N. E. Carter collection, Elkhorn, Wisconsin

No. 4—LOUISIA COUNTY, IOWA. Material, red and white clouded ferruginous quartz. Class B specimen. *C. W. Fair collection, Davenport, Iowa*

No. 5—MISSOURI, County unknown. Material, ferruginous quartz. Class C specimen.
F. P. Hills collection, Delaware, Ohio

No. 6—DADE COUNTY, FLORIDA. Material, ferruginous quartz. Class B specimen.
E. L. Renno collection, St. Charles, Missouri

No. 7—CAPE GIRARDEAU COUNTY, MISSOURI. Material, ferruginous quartz. Class C specimen. *E. L. Renno collection, St. Charles, Missouri*

No. 8—ST. CLAIR COUNTY, ILLINOIS. Material, ferruginous quartz. Class C specimen.
E. W. Payne collection, Springfield, Illinois

No. 9—GALLATIN COUNTY, ILLINOIS. Material, ferruginous quartz. Class C specimen.
L. C. Snyder collection, Lacona, New York

No. 10—JACKSON COUNTY, ILLINOIS. Material, ferruginous quartz. Found in 1904 near Beaucoup Creek. Class C specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 11—LOUISIANA, County unknown. Material, light brown quartzite. Class C specimen. *E. P. Hills collection, Delaware, Ohio*

No. 12—MENARD COUNTY, ILLINOIS. Material, white quartz. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

No. 13—BUTLER COUNTY, MISSOURI. Material, ferruginous quartz. Class C specimen.
E. L. Renno collection, St. Charles, Missouri

No. 14—HOWARD COUNTY, MISSOURI. Material, ferruginous quartz. Negative No. 24581G-29277. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 15—UNION COUNTY, ILLINOIS. Material, gray and yellow mottled quartzite. Class B specimen. *C. C. Benedict collection, Decatur, Illinois*

No. 16—ST. LOUIS COUNTY, MISSOURI. Material. ferruginous quartz. Class C specimen.
F. P. Hills collection, Delaware, Ohio

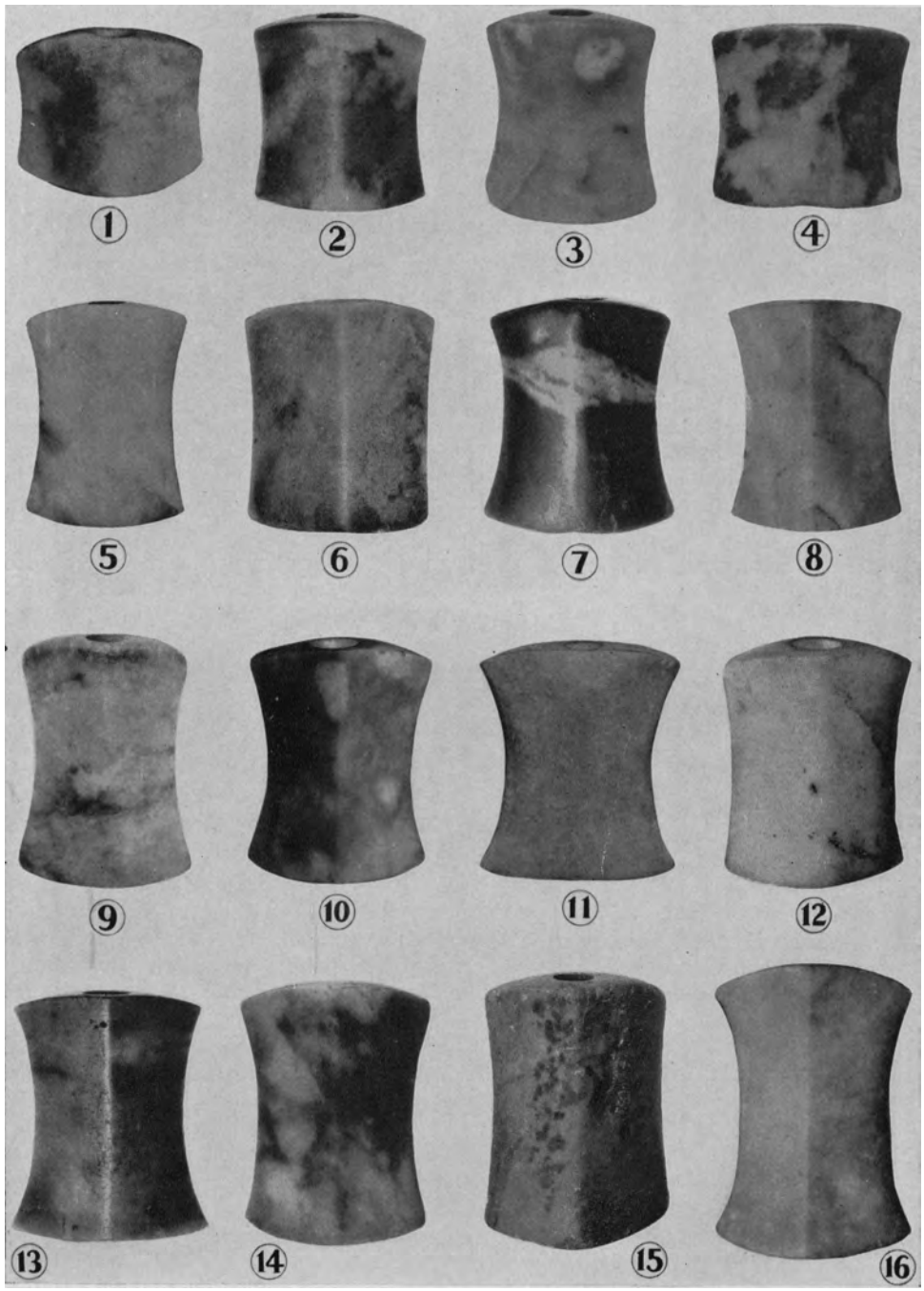


PLATE 133

EXPLANATION OF PLATE 134

HOUR-GLASS GROUP

Hour-glass Types No. 6 of Translucent Ferruginous Quartz from the Lower and Middle Mississippi Valley Areas

CLASS C SPECIMENS

Plate 5/9 actual size

No. 1—Locality (uncertain). Material, dark reddish brown quartz with a large almost white area on the face. This specimen is supposed to have been found in the Temple Mound, Le Flore County, Oklahoma, in the fall of 1934. The writer believes this data is not authentic. After checking another banner-stone that was also supposed to have been found in this mound, it was discovered that the specimen was found in the central part of Arkansas. The specimen illustrated was also probably found in the state of Arkansas. Size 3 1/4 x 2 1/2 inches. *From the author's collection*

No. 2—Linn County, Missouri. Material, translucent ferruginous quartz clouded with white. *Dr. F. F. Titterington collection, St. Louis, Missouri*

No. 3—Morehouse County, Louisiana. Material, translucent ferruginous quartz, deep red color. *From the author's collection*

No. 4—Pike County, Illinois. Material, translucent ferruginous quartz clouded with creamy white. Found in 1928 near the Illinois River. Catalogue number 2. *From the author's collection*

No. 5—Henry County, Tennessee. Material, translucent ferruginous quartz, pink color clouded with darker shades of red. Found near the town of Paris. Catalogue number 3. *From the author's collection*

No. 6—Cross County, Arkansas. Material, yellow and white translucent quartz. Found in a grave close to an Indian mound near the St. Francis River, near the town of Parkin, in 1926. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 7—Rock Island County, Illinois. Material, translucent ferruginous quartz. Found near Moline. This is the same specimen illustrated in Plate 14, under No. 1. Catalogue number 8. *From the author's collection*

No. 8—Randolph County, Illinois. Material, translucent ferruginous quartz. Highly polished. *Dr. P. F. Titterington collection, St. Louis, Missouri*

No. 9—Adams County, Illinois. Material, translucent pink ferruginous quartz. Found near Payson in 1928 by a farmer while plowing on the top of a hill. Catalogue number 10. *From the author's collection*

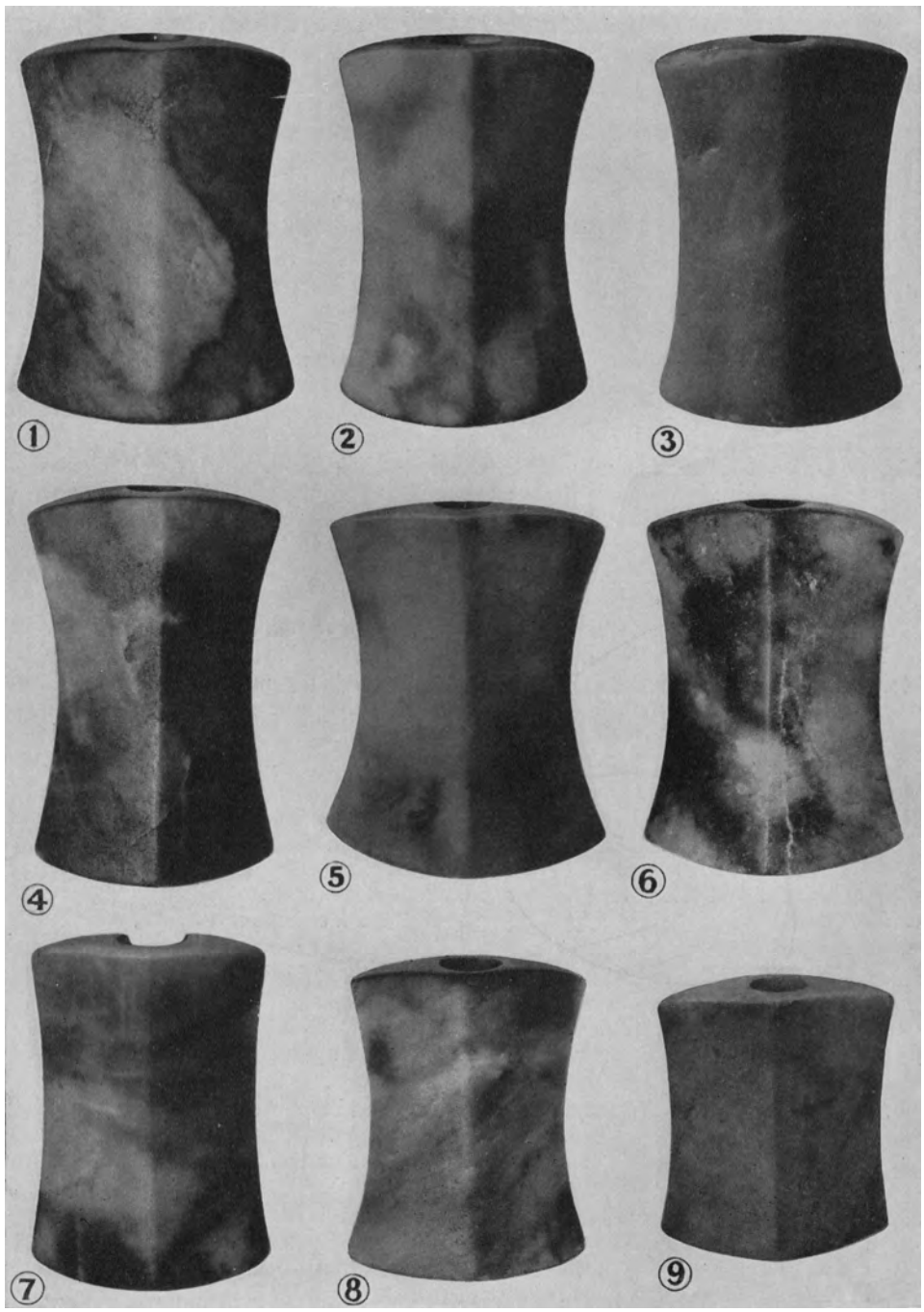


PLATE 134

EXPLANATION OF PLATE 135

HOUR-GLASS AND TRIANGULAR GROUPS

Bi-face Hour-glass and Bi-face Triangular Specimens from the Lower Ohio and Middle Mississippi Valley Areas

CLASS B AND C SPECIMENS

Plate 5/8 actual size

No. 1—POPE COUNTY, ILLINOIS. Material, ferruginous quartz. Found near Grand Pierre Creek in 1932. Both sides rounding. Class B specimen.
Irvin Peithman collection, Carbondale, Illinois

No. 2—UNION COUNTY, ILLINOIS. Material, ferruginous quartz. Found in the southwest corner of this county near Cypress Creek in 1932. Both sides rounding. Class B specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 3—WAYNE COUNTY, ILLINOIS. Material, gray sugar quartz, both sides rounding. Bi-face Hour-glass pattern. Collected by the author. Class B specimen.
Sprague W. Chambers collection, Kalamazoo, Mich.

No. 4—PRENTISS COUNTY, MISSISSIPPI. Material, ferruginous quartz. Found near Boonville. No evidence of drilling. Both sides convex. Because of the fact this bi-face Hour-glass pattern is made of ferruginous quartz it can be classified as a Type No. 6, Catalogue number 1. Class C specimen. *From the author's collection*

No. 5—MADISON COUNTY, ILLINOIS. Material, green and white mottled granite discolored from age. Hollow-reed drilling 3/4 inches deep. Both sides are ridged, the end view is diamond-shaped. Because of the fact both side edges are concave this specimen is classified as a bi-face Hour-glass pattern. Class B specimen.
Boudeman collection, Kalamazoo, Michigan

No. 6—HAMILTON COUNTY, OHIO. Material, red, white and yellow conglomerate, highly polished. Found near Cincinnati. Because this specimen is not made of ferruginous quartz it is a bi-faced Hour-glass blending form. Class B specimen.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 7—FAYETTE COUNTY, ILLINOIS. Material, black and tan speckled quartzite. Bi-face Triangular pattern, Type No. 4. Class C specimen.
Donald C. Boudemon collection, Kalamazoo, Michigan

No. 8—GASCONADE COUNTY, MISSOURI. Material, tan veined quartzite, highly polished. Found in 1927 near Hermann. Because this specimen is not made of ferruginous quartz it is a bi-faced Hour-glass blending form. This is the same specimen shown in Plate 40. Class B specimen. *From the author's collection*

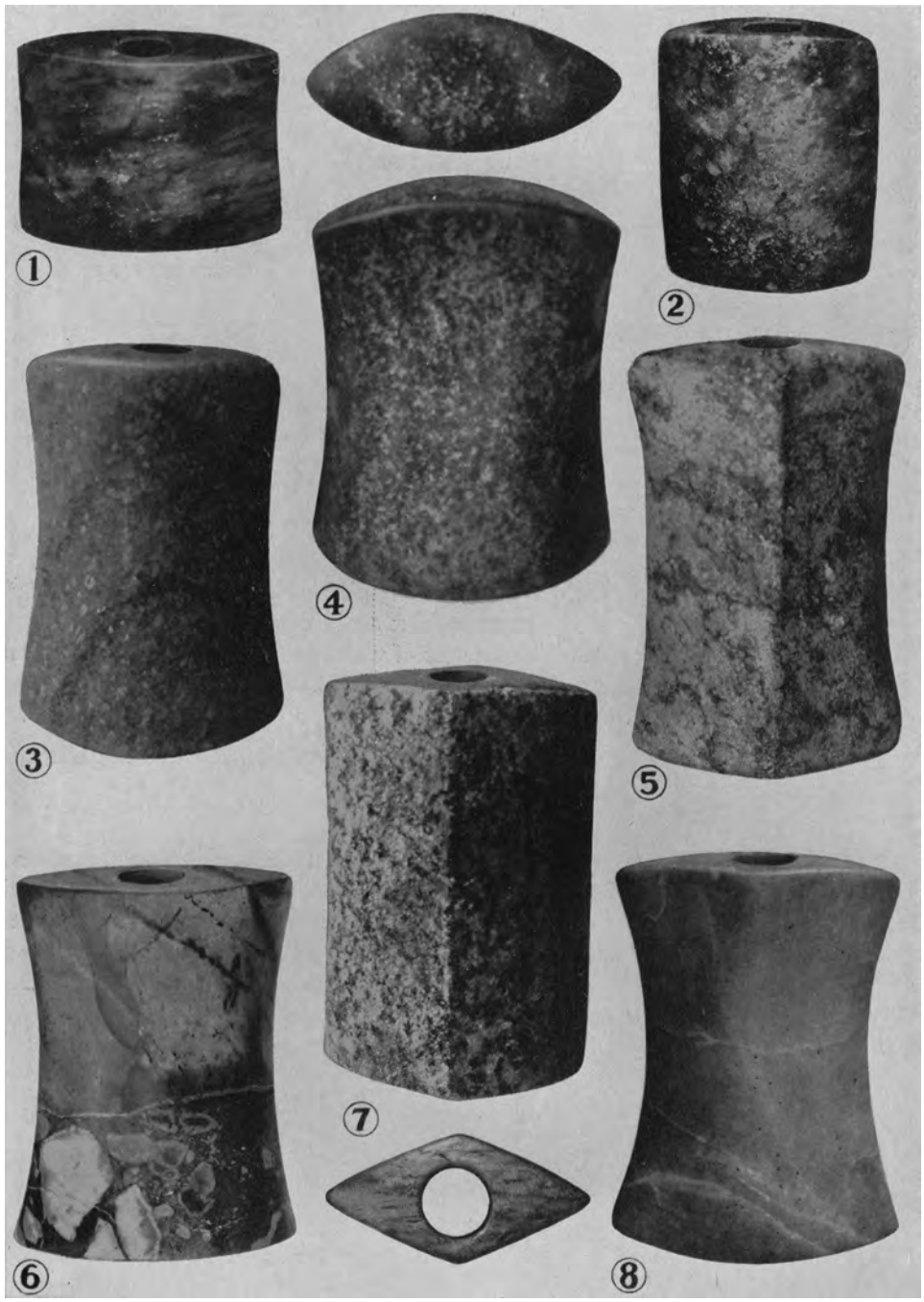


PLATE 135

EXPLANATION OF PLATE 136

HOUR-GLASS GROUP

Type No. 6 of Ferruginous Quartz from the Middle Mississippi Valley Area

CLASS C SPECIMEN

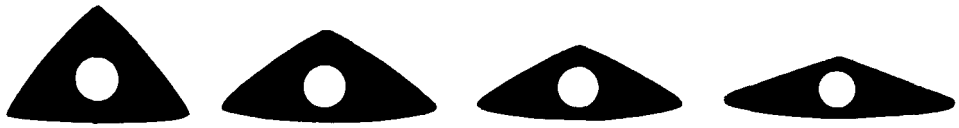
Plate actual size

CHRISTIAN COUNTY, KENTUCKY. This specimen is probably the largest type of its kind so far discovered. The translucent quartz material from which it is made is exceptionally beautifully marked with shades of white and deep red. The workmanship displayed is exceptionally remarkable. This specimen was collected by the late F. E. Ellis of Webster Groves, Missouri, many years ago. Size 3 3/8 x 4 3/4 inches.

E. L. Renno collection, St. Charles, Missouri

According to the figures of the *One Inch Table for the Drilling of Quartz* shown on page 109 which was established with a bow-drill using a drill-stick of cane, and dry sand as an abrasive, the perforation through this particular banner-stone which is four and three-fourths inches in length required 30,960,120 grinding revolutions to make. To develop this number of revolutions had required 285 hours of actual drilling, during which time 128¼ inches of cane was worn away.

PLATE 136



PRIMARY FORM BLENDING FORMS TYPE

PLATE 137.

Cross-sectional drawing of the patterns that comprise the Hour-glass Group, arranged in a sequence to illustrate their construction and evolution of design.

The accompanying plates show a large number of variations that comprise this group. These plates include many under-developed patterns which are made of many different materials and also many type specimens which are made of the adopted ferruginous quartz.

Plate 137 shows a series of cross-sectional pen-and-ink drawings which illustrate the evolution of this group. By these drawings one can note that as the design developed it became thinner in construction.

Because of the fact that the great majority of the blending forms and also the type specimens occur in the Middle Mississippi Valley Area, one can believe that this group had reached its highest development within this area. One can also believe that it was in this area that the ferruginous quartz material was finally adopted for the making of the types, to add to their ceremonial significance.

The types are usually quite thin in cross-section. The back is a slightly convex plane, and the face has two flat planes which form a ridge running parallel with the perforation.

The drilling of the perforations of the ultimate designs was usually done from one end with a drill-stick of hollow-reed or bone. The great majority of those which show incompleted drilling have a protruding core.

Probably the largest and finest *Hour-glass* type specimen so far discovered is illustrated in Plate 136. This object is made of exceptionally beautiful translucent ferruginous quartz, and displays remarkable workmanship.

According to the writer's experiment of drilling in ferruginous quartz with a hollow reed and sand, the perforation through this banner-stone, which is four and three-fourths inches in length, required 32,769,528 grinding revolutions, 285 hours of actual drilling time, and 128¼ inches of cane was worn away.

SADDLE-FACE GROUP
TYPE No. 7

For many years the patterns that comprise this group have been called "Saddle-back." It matters little how the term "Saddle-back" originated. Either some early writer had used this term when referring to these objects, or the term was originated by collectors many years ago, who have popularly used it ever since. Nevertheless, this name apparently is wrong and should be changed.

In the sub-chapter *Classifying the Planes of Banner-Stones* the writer has explained in detail the reasons why the name "Saddle-back" should be changed to *Saddle-face*. It is hoped that those who are interested in the study of these problematical stones will hereafter use this newly revised terminology.

These unusually designed patterns developed from the *Southern Triangular Primary Form No. 2*. The blending forms are usually made of speckled or spotted varieties of granite and quartzite materials. But rarely were these objects made of other varieties of stone. These patterns occur throughout the Middle Mississippi Valley Area.

The type specimens are quite plentiful in the southern half of Indiana and a large part of Illinois and eastern Missouri. Those found in the Mississippi Valley are usually made of carefully selected mottled or spotted granite and porphyry materials. Quite a large percentage of those found in Indiana are made of spotted quartzite material and also a variety of olive green quartz. The complex situation, as to why different materials were adopted in different sections, is explained in the chapter *Adoption of Special Materials for Particular Types*.

The specimens that show the highest degree of development are those which have pronounced knobs on the face and placed at each end. Just why these patterns were so designed is an unsolved mystery. The knobs on some of the type specimens are shaped into contrivances like hooks, and are so arranged that they point to each other.

(*Continued on Page 296*)

EXPLANATION OF PLATE 138

SADDLE-FACE GROUP

Blending Forms and Types No. 7 of Various Materials from the Middle Mississippi Valley Area

CLASS B AND C SPECIMENS

Plate 1/2 actual size

No. 1—INDIANA, County unknown. Material, greenish-gray quartzite with dark gray spots. *Con Foster Museum collection, Traverse City, Michigan*

No. 2—CLARK COUNTY, INDIANA. Material, dark ferruginous quartz. Jeffersonville Twp. Catalogue number 7. Acc. No. 218. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 3—SPENCER COUNTY, INDIANA. Material, brown and white spotted granite. Catalogue number 6. Acc. No. 26. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 4—FLOYD COUNTY, INDIANA. Material, olive green quartzite with faint tan spots. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 5—CLARK COUNTY, INDIANA. Material, olive green quartzite. Jeffersonville Twp. Catalogue number 34. Acc. No. 219. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 6—INDIANA, County unknown. Material, olive green quartzite, discolored gray from disintegration. Catalogue number 7. Acc. No. 26. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 7—LAPORTE COUNTY, INDIANA. Material, dark gray porphyry with large white spots. Catalogue number 67. Acc. No. 14. Drilling unfinished. Class C specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 8—ADAMS COUNTY, ILLINOIS. Material, dark green and white mottled granite with brown coat of patina. Found near Lima Lake. Hollow reed drilling, 1/4 inch deep. Class C specimen. *From the author's collection*

No. 9—FLOYD COUNTY, INDIANA. Material, pale gray quartzite, speckled with black. Catalogue number 663. Acc. No. 14. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 10—CLERMONT COUNTY, OHIO. Material, olive green quartzite with small spots of black. Class C specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 11—FULTON COUNTY, INDIANA. Material, dark green and gray speckled granite. Catalogue number 113. Acc. No. 31. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 12—CLARK COUNTY, INDIANA. Material, dark bluish-green and white, mottled granite. Discolored tan from age. Catalogue No. 402. Acc. No. 14. *Indiana Historical Society collection, Indianapolis, Indiana*

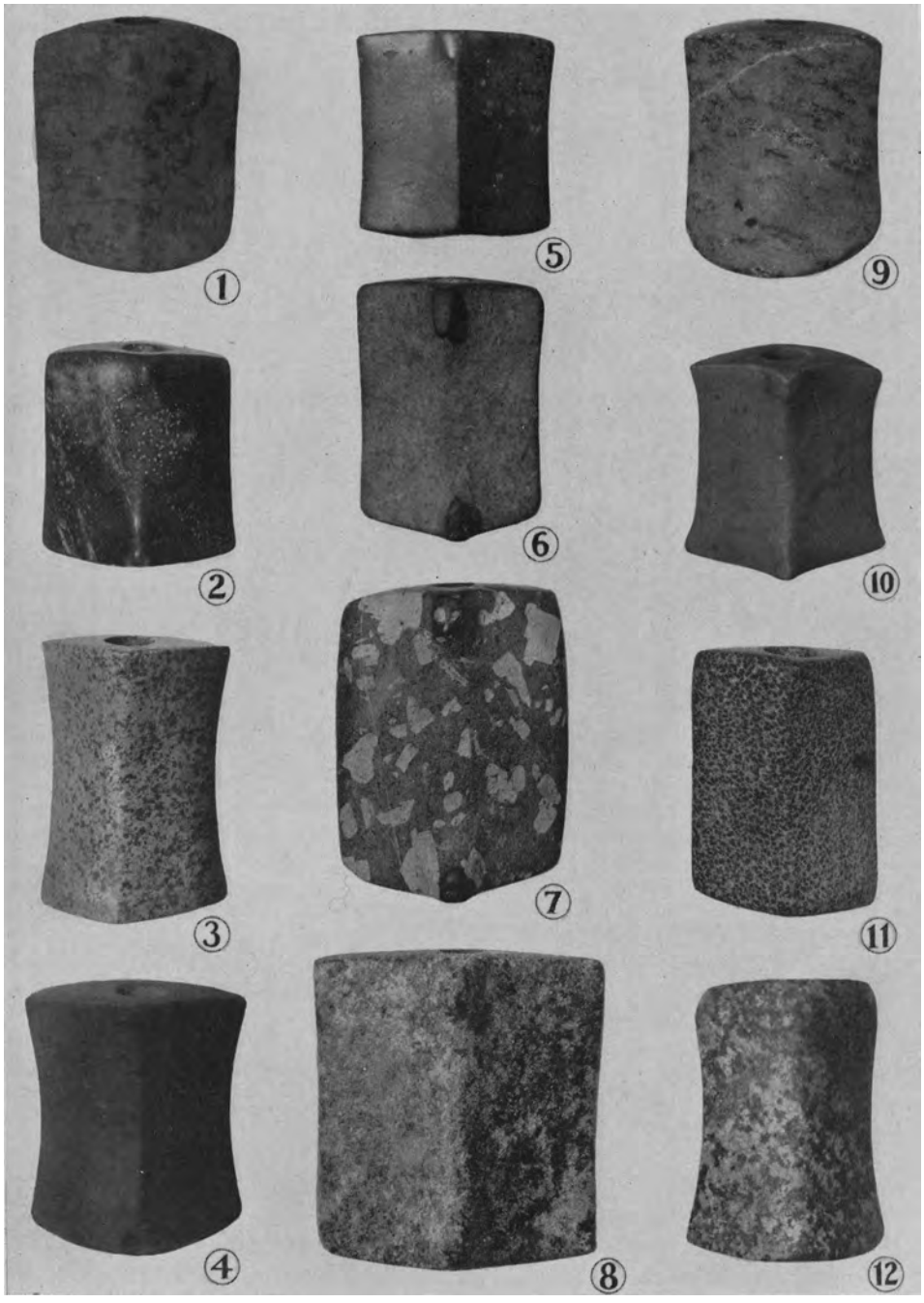


PLATE 138

EXPLANATION OF PLATE 139

SADDLE-FACE GROUP

Saddle-face Types No. 7 of Various Spotted Granite Materials from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 5/8 actual size

No. 1—SEVIER COUNTY, ARKANSAS. Material, mottled brown granite. Found near Rolling Fork River in 1926. Catalogue number Z-15.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 2—LINCOLN COUNTY, MISSOURI. Material, green and white spotted porphyry.
Dr. T. F. Titterington, St. Louis, Missouri

No. 3—Locality unknown, (probably Illinois). Material, spotted granite.
E. W. Payne collection, Springfield, Illinois

No. 4—HANCOCK COUNTY, ILLINOIS. Material, olive green quartz, spotted with lighter shades. *From the author's collection*

No. 5—UNION COUNTY, ILLINOIS. Material, black and white mottled granite. The back of this specimen is shown in Plate 140 under No. 10.
Dr. T. F. Titterington, St. Louis, Missouri

No. 6—MARION COUNTY, INDIANA. Material, tan granite with black spots, discolored brown from age. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 7—ROCK ISLAND COUNTY, ILLINOIS. Material, black and white spotted granite. An end view is shown above. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—GREENE COUNTY, ILLINOIS. Material, dark porphyry with large Feldspar spots of light green and tan. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 9—JEFFERSON COUNTY, IOWA. Material, mottled and spotted green granite. An end view is shown above. *From the author's collection*

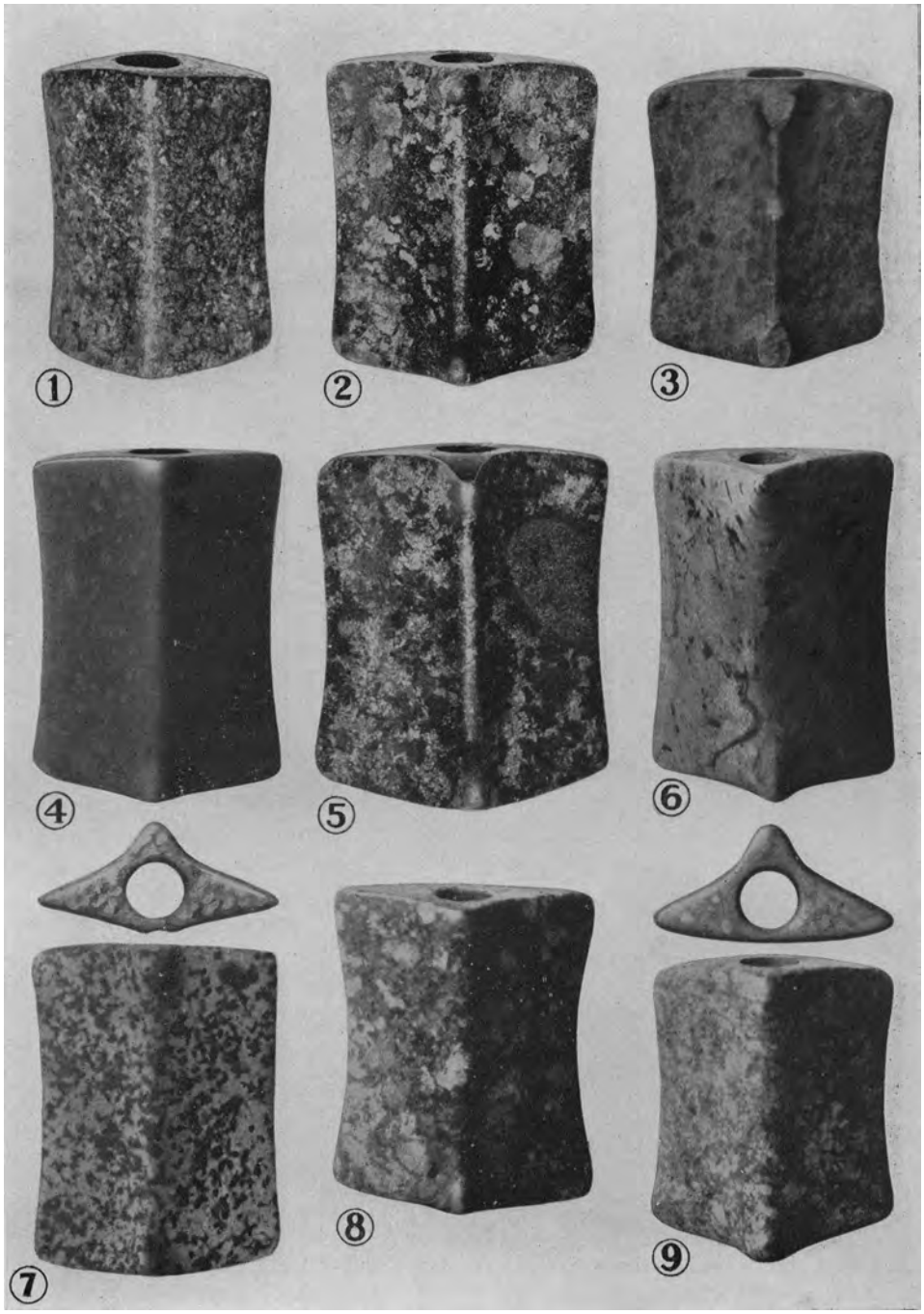


PLATE 139

EXPLANATION OF PLATE 140

SADDLE-FACE GROUP

Types No. 7 of Various Spotted Granite Materials from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—HARDIN COUNTY, ILLINOIS. Material, bluish gray mottled quartzite.
B. W. Stephens collection, Quincy, Illinois

No. 2—HEMPSTEAD COUNTY, ARKANSAS. Material, black and white mottled granite badly disintegrated. Found near Bois-dArc Creek in 1923.
Harry J. Lemley and W. Kendall Lemley, Hope, Arkansas

No. 3—HANCOCK COUNTY, ILLINOIS. Material, greenish-gray quartzite. Found near the town of Nauvoo. *E. W. Payne collection, Springfield, Illinois*

No. 4—ADAMS COUNTY, ILLINOIS. Material, black, green and white speckled granite. Found near Lima Lake. *E. W. Payne collection, Springfield, Illinois*

No. 5—ST. CLAIR COUNTY, ILLINOIS. Material, green and gray mottled granite.
B. W. Stephens collection, Quincy, Illinois

No. 6—WAYNE COUNTY, OHIO. Material, chlorite, straw color with brown spot. Catalogue number 226.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 7—PIKE COUNTY, ILLINOIS. Cast. Material, porphyry with large feldspar crystals. J. J. R. Patrick, Negative number 29277.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 8—INDIANA, County unknown. Material, greenish-gray granite.
A. C. Dickson collection, Lewistown, Illinois

No. 9—MONTGOMERY COUNTY, MISSOURI. Material, gray porphyry with green spots.
B. W. Stephens collection, Quincy, Illinois

No. 10—UNION COUNTY, ILLINOIS. Material, black and white mottled granite.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 11—MORGAN COUNTY, ILLINOIS. Material, black and white spotted granite, discolored yellow from age. *E. W. Payne collection, Springfield, Illinois*

No. 12—CALHOUN COUNTY, ILLINOIS. Material, dark mottled granite.
E. L. Renno collection, St. Charles, Missouri

No. 13—CLAY COUNTY, ILLINOIS. Material, mottled white quartzite, undrilled. Stenford Twp. *C. C. Benedict collection, Decatur, Illinois*

No. 14—JASPER COUNTY, MISSOURI. Material, gray granite.
B. W. Stephens collection, Quincy, Illinois

No. 15—ADAMS COUNTY, ILLINOIS. Material, olive green quartz. Found near Lima Lake.
E. W. Payne collection, Springfield, Illinois

No. 16—SHELBY COUNTY, ILLINOIS. Material, black and white spotted granite, undrilled Lake Wood Twp. *C. C. Benedict collection, Decatur, Illinois*

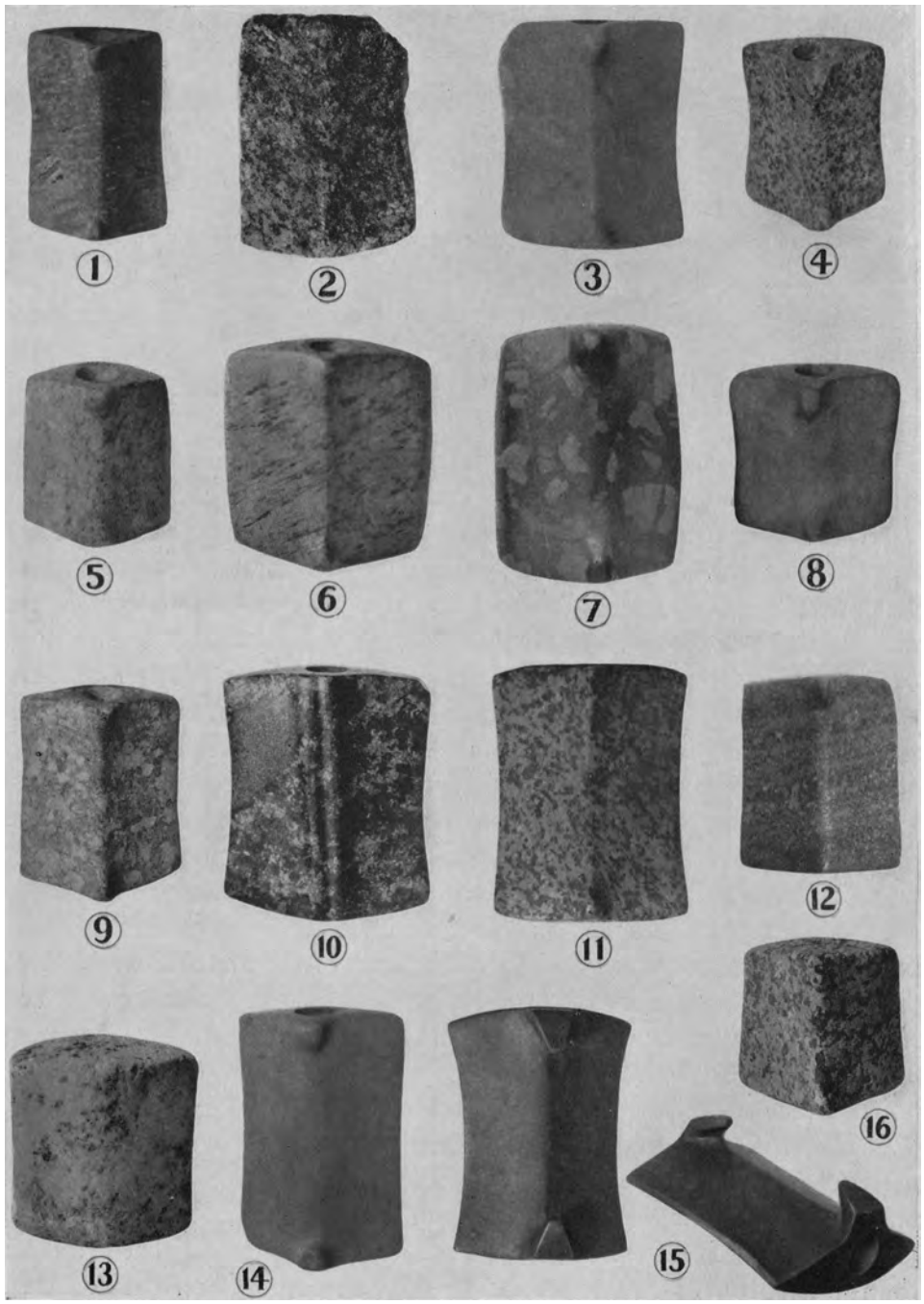


PLATE 140

PLATE 141.

Cross-sectional drawing of the patterns that comprise the Saddle-face Group, arranged in a sequence to illustrate their construction and evolution of design.

It is by the prominence of these knobs that permit one to select those which are types and those which are blending forms. Naturally, the specimens which have unpronounced knobs can be regarded as blending forms.

The *Saddle-face* types are composed of two variations. The back of the one variation is a plain slightly convex plane. The back of the other variation has a roundedly raised area running through the middle of the stone its full length parallel to the perforation. In the middle of this raised area there has been made a narrow and shallow flute that is carried the full length of the stone. Just why this flute was so placed is impossible to say, unless it signified some ceremonial importance. The variations that are fluted are far rarer than those which have the plain back. Furthermore, this fluting is only noted upon those which are ultimate designs.

The most highly developed type specimen so far observed is shown in Plate 140, under No. 15. This remarkable object is made of olive green quartz, and was found in Adams County, Illinois. The pronounced knobs on each end of the face are formed into well defined hooks and so arranged they point to each other. Because this object is made of this material, one can believe that it was made in the State of Indiana and was carried to the locality where it was discovered. The reason for this conclusion is because many of these patterns found in Indiana are made of this variety of rock.

Another interesting type specimen is shown in Plate 139, under No. 5. This object is from Union County, Illinois, and is made of black and white mottled granite. The view shown is the face, which displays the knobs on each end. Another picture of the same specimen is shown in Plate 140, under No. 10. This view shows the back which has a flute that is carried the full length of the stone parallel to the perforation upon a raised area.

SINGLE-FACE BOTTLE GROUP

TYPE No. 8

The term, "Bottle", has been used as the name for these curiously designed patterns for many years. The name is suitable for the design and there is no need to change it. But, after the lines and planes of the so-called "Bottle" patterns were studied, it was discovered that they consisted of two differently designed variations. The one variation is of *single-face* construction, the other variation is of *bi-face* construction. Furthermore, when the evolution of these two differently designed patterns were studied, it was discovered that they were independently developed from two different primary forms.

Therefore, it has been necessary to divide these two different designs into two separate type groups. It has also been necessary to create a terminology by which each group could be identified. The patterns that are of *single-face* construction comprise the *Single-face Bottle Group* and those of *bi-face* construction comprise the *Bi-face Bottle Group*.

The *Single-face Bottle* patterns were developed from the *Southern Triangular Primary Form No. 2*, and the *Bi-face Bottle* patterns developed from the *Southern Tubular Primary Form No. 8*. A more detailed description of the *bi-face* designs will be given later in a separate article on that group, accompanied with plates.

The design of the *single-face* type specimens was developed gradually by improved changes upon the design of the blending forms. Yet the design of the ultimate patterns still retains the simply arranged planes of the *Triangular* primary form from which it developed, even though the general outline is entirely different.

The blending forms of the *Single-face Bottle Group* occur throughout the Middle Mississippi Valley Area. They are most abundant in the western half of Tennessee and Kentucky, southern Illinois, and the eastern

(Continued on Page 302)

EXPLANATION OF PLATE 142

SINGLE-FACE BOTTLE GROUP

Blending Forms of Various Materials from the Lower and Middle Mississippi Valley Areas

CLASS B SPECIMENS

Plate 5/9 actual size

No. 1—WARREN COUNTY, MISSISSIPPI. Material, dark red limonite, mottled with shades of brown and yellow. Highly polished. *M. E. Carter collection, Elkhorn, Wisconsin*

No. 2—HENRY COUNTY, TENNESSEE. Material, ferruginous slate. Size 2 1/2 x 1 7/8 inches. Note the six drilled conical depressions on the face of the specimen. Formerly in Dr. A. W. Pendergast collection.
Con Foster Museum collection, Traverse City, Michigan

No. 3—BUTLER COUNTY, MISSOURI. Material, ferruginous slate.
J. A. Meyer, St. Louis, Missouri

No. 4—CROCKETT COUNTY, TENNESSEE. Material, polished red hematite. Size 2 1/2 x 2 1/4 inches. Catalogue number 24. *From the author's collection*

No. 5—JACKSON COUNTY, ILLINOIS. Material, red, white, and yellow mottled quartzite. Hollow-reed drilling just started. Size 2 3/4 x 2 1/2 inches.
Irvin Peithman collection, Carbondale, Illinois

No. 6—PHILLIPS COUNTY, ARKANSAS. Material, ferruginous slate. Found in the southern part of this county between the White and Mississippi Rivers on the surface of the Mason Place in 1916. Catalogue number Z-16.
W. Kendall Lemley and Harry J. Lemley collection, Hope, Arkansas

No. 7—MILLER COUNTY, ARKANSAS. Material, brown quartzite. Found in 1922, on the surface of the Creushawplace. Red River Bottoms. Incompleted solid stick drilling, started from each end, one hole 1/2 inch deep, the other hole 3/4 inch deep. Catalogue number Z-5. *W. Kendall Lemley and Harry J. Lemley collection, Hope, Arkansas*

No. 8—PULASKI COUNTY, ILLINOIS. Material, ferruginous slate. Found on the surface near Cache Creek. *Irvin Peithman collection, Carbondale, Illinois*

No. 9—JACKSON COUNTY, ILLINOIS. Material, ferruginous slate. Found many years ago near Grand Tower. Note that part of one end is broken away, apparently by the inserting of the staff. *T. R. Reichert collection, Grand Chain, Illinois*

No. 10—WUHLENBURG COUNTY, KENTUCKY. Material, black and white speckled granite, highly polished. Found in the Green River Bottoms in 1900. Size 2 1/2 x 2 inches. Catalogue number 6. *From the author's collection*

No. 11—MACOUPIN COUNTY, ILLINOIS. Material, tan quartzite. Catalogue number 269.
John Maffenbeier collection, Newark, New Jersey

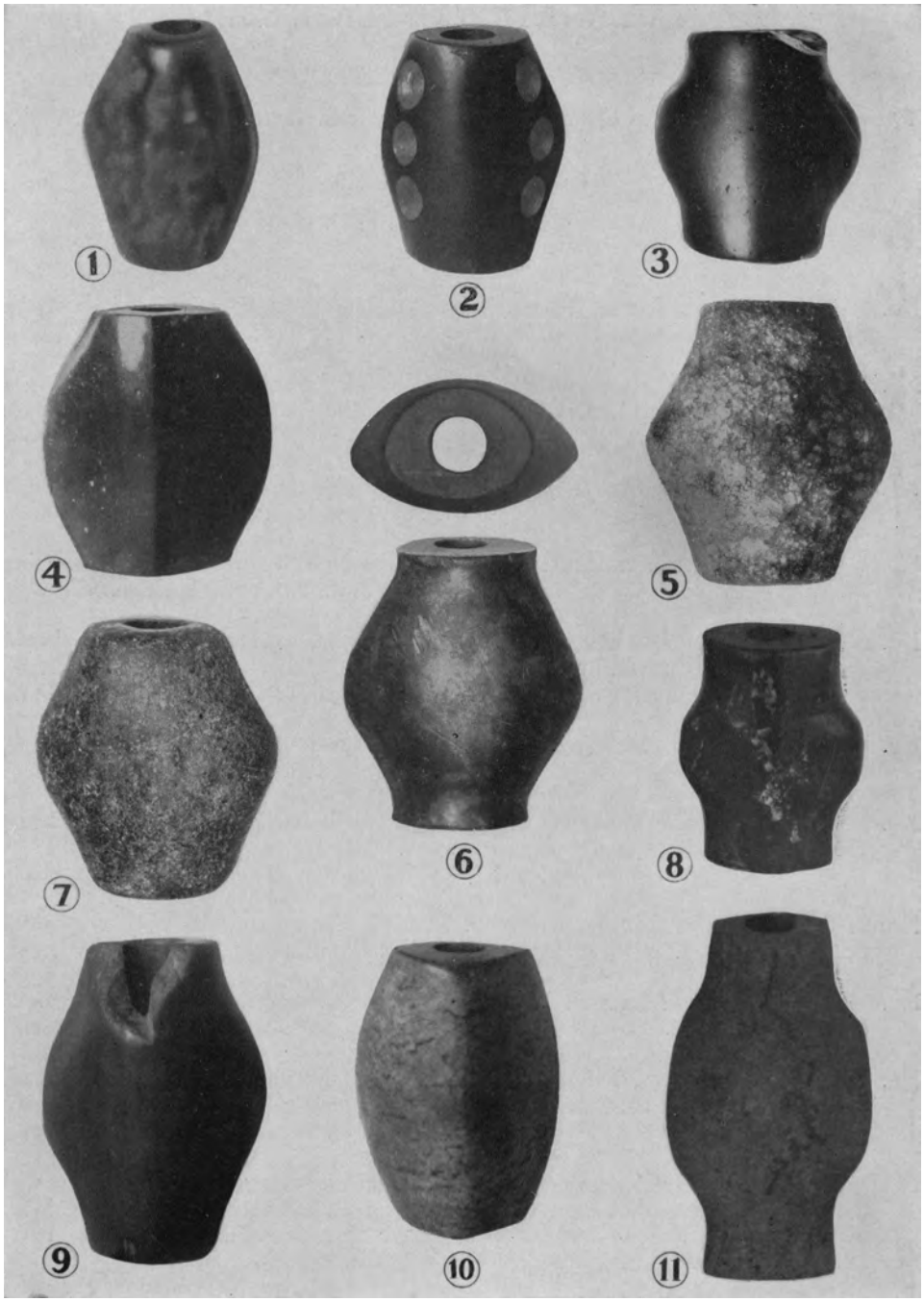


PLATE 142

EXPLANATION OF PLATE 143

SINGLE-FACE BOTTLE GROUP

Types No. 8 of Ferruginous Quartz Material mainly from the Middle Mississippi Valley

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—DAVIS COUNTY, IOWA. Material, ferruginous quartz. Found near the town of Bloomfield. Catalogue number 25610. *F. P. Hills collection, Delaware, Ohio*

No. 2—JOHNSON COUNTY, ILLINOIS. Material, pale pink ferruginous quartz. Found near the town of Vienna in October 1929. Size 3 1/2 x 2 1/2 inches. Catalogue number 15. *From the author's collection*

No. 3—BOONE COUNTY, MISSOURI. Material, pink ferruginous quartz, mottled with deeper shades of red. *E. W. Payne collection, Springfield, Illinois*

No. 4—TRIGG COUNTY, KENTUCKY. Material, ferruginous quartz. Catalogue number 24886. *F. P. Hills collection, Delaware, Ohio*

No. 5—JEFFERSON COUNTY, WEST VIRGINIA. Material, ferruginous quartz. Found near the town of Charlestown. Size 2 5/8 x 2 1/8 inches. Catalogue number 90714, Case 18. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 6—PERRY COUNTY, MISSOURI. Material, ferruginous quartz, mottled with deep shades of red. *E. L. Renno collection, St. Charles, Missouri*

No. 7—BUTLER COUNTY, MISSOURI. Material, pinkish brown quartzite. Found, May, 1931. Size 3 3/4 x 2 5/8 x 1 3/8 inches thick. Catalogue number 91. *From the author's collection*

No. 8—STE. GENEVIEVE COUNTY, MISSOURI. Material, ferruginous quartz, mottled with deep shades of red. *E. L. Renno collection, St. Charles, Missouri*

No. 9—BOONE COUNTY, MISSOURI. Material, gray quartzite, mottled with a small amount of pink on the back. *Dr. P. F. Titterington collection, St. Louis, Missouri*

No. 10—LINCOLN COUNTY, MISSOURI. Material, pink ferruginous quartz. Undrilled. The one end shown is indented, and is the beginning of the drilling. *B. W. Stephens collection, Quincy, Illinois*

No. 11—PERRY COUNTY, ILLINOIS. Material, ferruginous quartz. This specimen was found on the surface, at a camp-site, on the banks of Swanwick Creek, on the Wm. McLurken farm, located southeast of Oakdale, by Martin Sibel, in the year 1932. Purchased from W. A. Parkinson, at Pinckneyville. *Irvin Peithman Collection, Carbondale, Illinois*

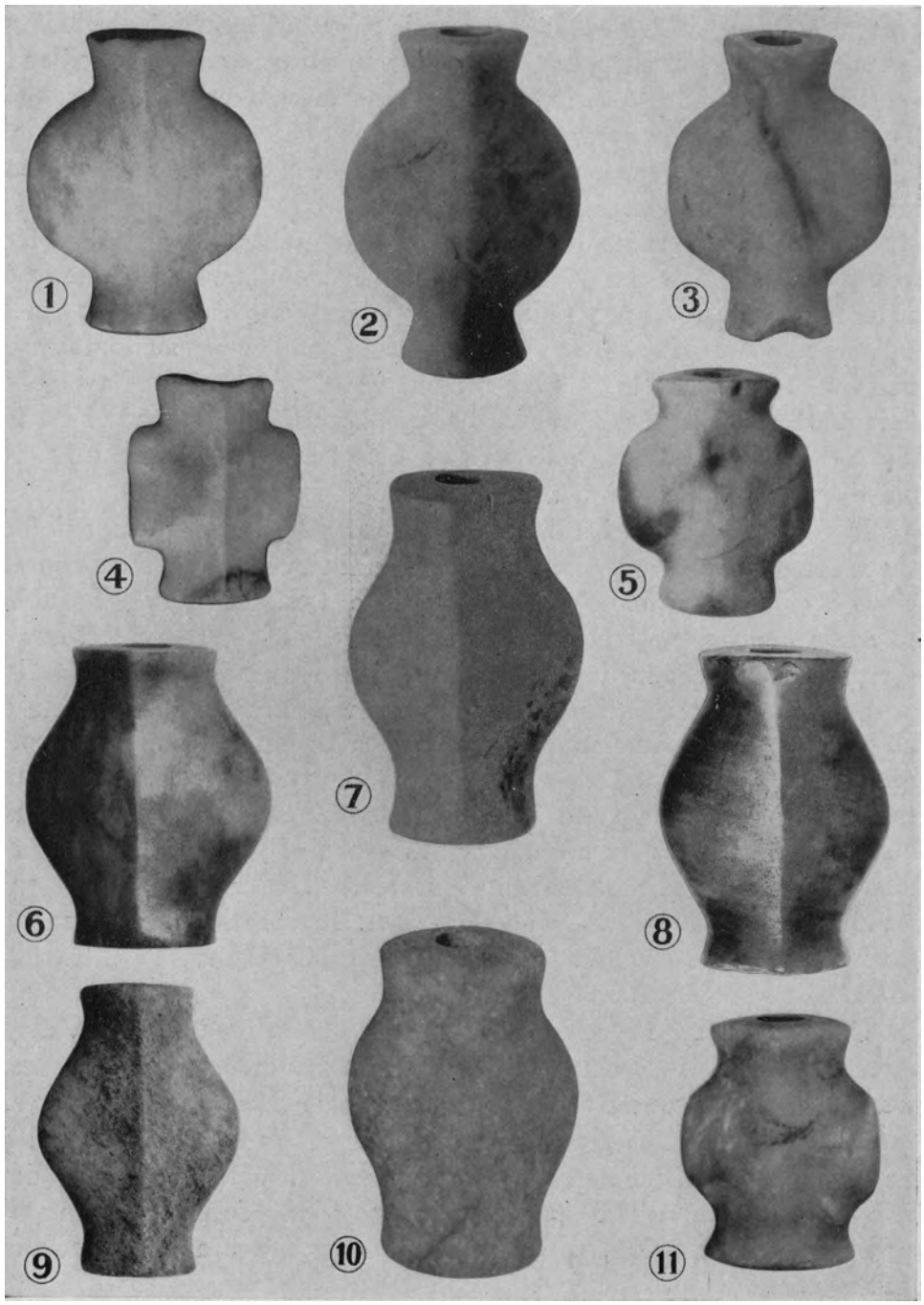


PLATE 143

part of Missouri. Usually they are made of various materials, including limonite, ferruginous slate, banded clay-stone, red hematite, speckled and spotted granite, and also variously colored and spotted quartzite materials. The early designed patterns can easily be identified by the convex side. edges. Those designed later show that both ends were shaped into more pronounced necks.

The ultimate patterns or types are usually artistically shaped. Frequently the side edges bulge to the extent that they form almost a perfect circle from which two necks protrude. The necks are usually quite small and the two ends are considerably larger, thus forming pronounced flares. In Plate 143 under No. 2 is shown an excellent example of a highly developed type specimen. The face of this beautifully designed object is displayed in this picture, and the two flat planes that form a ridge is plainly visible. The back is a flat plane.

It is very evident that ferruginous quartz was finally adapted for the making of the ultimate designs to add to their ceremonial significance, Thus, by noting the patterns which are made of this material, one is able to easily identify the types from the blending forms. Frequently, however, specimens showing highly developed lines are noted which are made of some material other than ferruginous quartz. Yet these objects must be classified as blending forms, even though their construction is comparable to the lines and planes of some of the types. These particular specimens were undoubtedly made prior to the time when ferruginous quartz was adapted as a material which supposedly had carried a spiritual meaning. The ultimate designs reached their highest development in the Middle Mississippi Valley Area. It was also in this area that ferruginous quartz material was ceremonially adapted for their making to add to their significance.

Occasionally type specimens occur in the Upper Mississippi Valley Area as far north as southern Wisconsin. These scattered objects, however, were undoubtedly carried there from the Middle Mississippi Valley Area.

Accompanying this article are a number of plates which illustrate many specimens including those under-developed and those highly developed. One can easily follow the evolution of this design, and can also observe by these plates, that ferruginous quartz was adopted for the making of the ultimate designs.

HINGE-TYPE GROUP

TYPE No. 9

This group of banner-stones is particularly interesting because the designs of the patterns which comprise it show so many variations. The construction of the highly developed specimens is unquestionably the most peculiarly designed patterns of all banner-stones.

It has been a difficult task to establish the evolution of this group because to do so necessitated certain requirements. The differently designed variations must show by their lines and planes a relationship from one pattern to another. Thus to follow and study the evolution of this group created a very complicated problem.

The objects which can be classified in this group are very rare. Pictures of only eight specimens are illustrated in Plate 145. The two most highly developed patterns of those shown in this plate are No. 4 and No. 5, both of which were found in the state of Ohio. These two objects can be regarded as types.

The largest and most beautifully made type specimen observed by the writer was in the Payne collection. The design was exactly the same as that of No. 5, and it was also made of banded-slate. This beautiful and extremely rare object was found in the state of Ohio, but was sold before the writer was able to have it photographed. He was unable to learn who was the purchaser. It is to be regretted deeply that a picture of this specimen is not included in this plate.

It is very unfortunate that there are not more of these peculiarly designed patterns available so that one could study the development of their design and evolution more intelligently. After observing the variations of those illustrated in the accompanying plate, one can note that there should be included other developing blending forms which would connect the extremely simple designs to those which are highly developed. If, however, some of these missing connecting patterns could be found,

one could then be able to arrange a more complete sequence and establish the evolution of this group in a more comprehensible manner. Yet, after one studies the lines and planes of the few that are assembled in this plate, it is discovered that there actually exists a relationship between those simply designed and those which can be regarded as types.

One can also note that the two simply designed specimens, No. 1 and No. 2, were both found within the Primary Area in the state of Georgia. The lines and planes of these two objects correspond to a certain extent to those of the *Southern Triangular Primary Form No.* 2. The back of these two patterns is a convex plane and the face has two flat planes. Therefore, one can formulate a relationship between these two objects, No. 1 and No. 2, to the *Triangular* primary form. Thus it is easy to comprehend the origin of this type group.

Even though only a small number of these variously shaped objects have been observed, the writer has placed them into an independent type group which he has named the *Hinge-type Group*. The reason why this name was selected is that the shape of some of the highly developed specimens are so similar in shape to that of some metal hinges. Although this name may seem rather crude to many, it is hoped that it will be regarded as being very appropriate to the design.

There may be some controversy concerning the classification of some of these objects. Some may believe that the two type specimens No. 4 and No. 5 shown in Plate 145 should not be regarded as banner-stones because of their construction, and also because of their smallness. But there should be no need to question this classification. The perforation through these two small objects corresponds to those through other banner-stones belonging to other groups. It is not uncommon to note exceptionally small patterns in many other type groups. Although these two specimens are very small, one must not forget the larger one which was in the Payne collection. There is no questioning that these patterns are banner-stones. But whether these symbols were placed on staffs or were worn is difficult to say.

Because of the fact that the three ultimate designs or types (the two illustrated No. 4 and No. 5, and the larger one which was in the Payne collection) were found in the state of Ohio, and because the three specimens are very similar in design is substantial proof that this group had

PLATE 144.

Cross-sectional drawing of the patterns that comprise the Hinge-type Group, arranged in a sequence to illustrate their construction and evolution of design.

reached its highest development within this area. There is no doubting that there are more of these patterns to be found either in collections or in the ground.

Probably some day, after a larger number of these objects are located and can be studied, more can be learned about them. It may then be discovered that the distribution of the types extend over an even larger area than now believed. The missing blending forms which could now form a more complete sequence, and establish the evolution of this group more thoroughly, possibly will also be found.

Sometime, at a later date, it may also be necessary to divide the developed patterns into two type variations. Possibly a number of the speckled or spotted granite variations will be located in the Middle Mississippi Valley Area, similar in shape to the one illustrated in Plate 145 under No. 3. If such patterns were found, it may be then necessary to separate those from this area made of granite, from those found in Ohio made of banded-slate, and a new arrangement to classify them could be suggested. The two type variations could still belong to the same type group, and each could be identified by adding to its type number a letter, such as A and B, much in the same manner as the variations of bird species are classified to-day.

Plate 144 shows a series of pen-and-ink cross-sectional drawings of the differently designed patterns that comprise the *Hinge-type Group*. The drawings illustrate the evolution of the design by showing that the two planes which form a ridge on the face of the early made blending forms were transformed into a raised area, semi-circular in shape, and placed upon a flattened plane. The back of the ultimate designs are a perfectly flat plane, while the back of the underdeveloped patterns are usually a slightly convex plane.

EXPLANATION OF PLATE 145

HINGE-TYPE GROUP

Blending Forms and Types No. 9 of Various Materials from the Southern and Type Areas

CLASS B AND C SPECIMENS

Plate 1/2 actual size

No. 1—RICHMOND COUNTY, GEORGIA. Material, greenish gray steatite. Blending form Class B specimen. *E. W. Payne collection, Springfield, Illinois*

No. 2—TOWNS COUNTY, GEORGIA. Material, gray and white steatite coarsely flaked with mica, colored rusty brown from iron in the soil in which it lay. Undrilled blending form. Class B specimen. *From the author's collection*

No. 3—MORGAN COUNTY, ILLINOIS. Material, green and white spotted granite, discolored brown from age. Found near the town of Meredosia in 1900. Formerly in the Dr. W. A. Pendergast collection. Class C specimen. *Con Foster Museum collection, Traverse City, Michigan*

No. 4—SCIOTO COUNTY, OHIO. Material, gray steatite, discolored brown from age. Found near the town of Plymouth at the mouth of the Scioto River. Class C specimens. *B. W. Stephens collection, Quincy, Illinois*

No. 5—OHIO, County unknown. Material, green banded-slate. Formerly in the E. W. Payne collection. Catalogue number A7426. The four views of this specimen clearly show its construction. Class C specimen. *Claude U. Stone collection, Peoria, Illinois*

No. 6—FLOYD COUNTY, INDIANA. Material, finely grained wiry granite, discolored brown from age. Hollow-reed drilling 7/8 inch deep. Blending form. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—FLOYD COUNTY, INDIANA. Material, dark green finely grained wiry granite. Found near the town of New Albany, close to the Ohio River. Blending form. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 8—KENDALL COUNTY, ILLINOIS. Material, brown fossilliferous limestone. Found near the town of Yorkville close to the Fox River. Class B specimen. *George Bedford collection, Morris, Illinois*

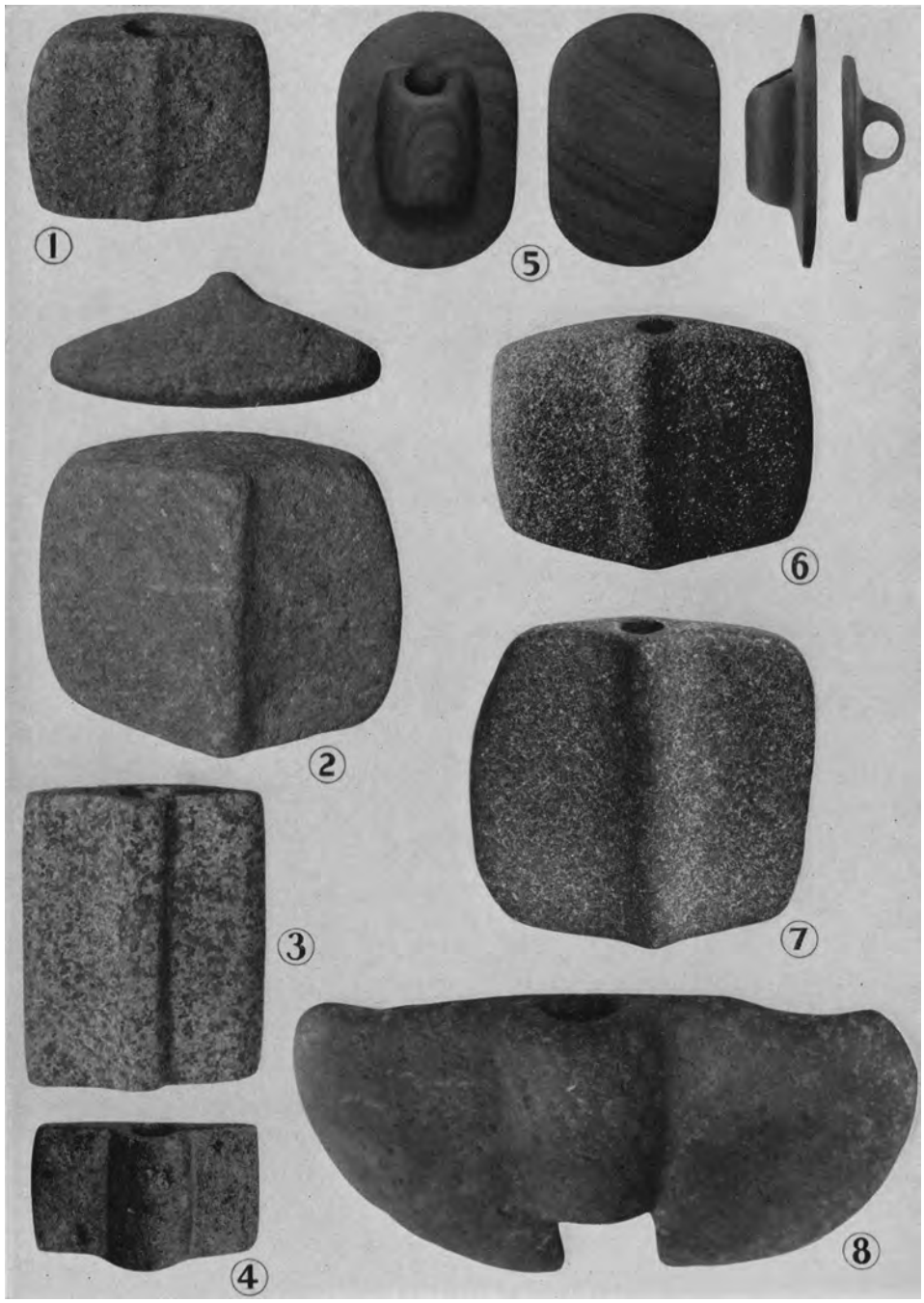


PLATE 145

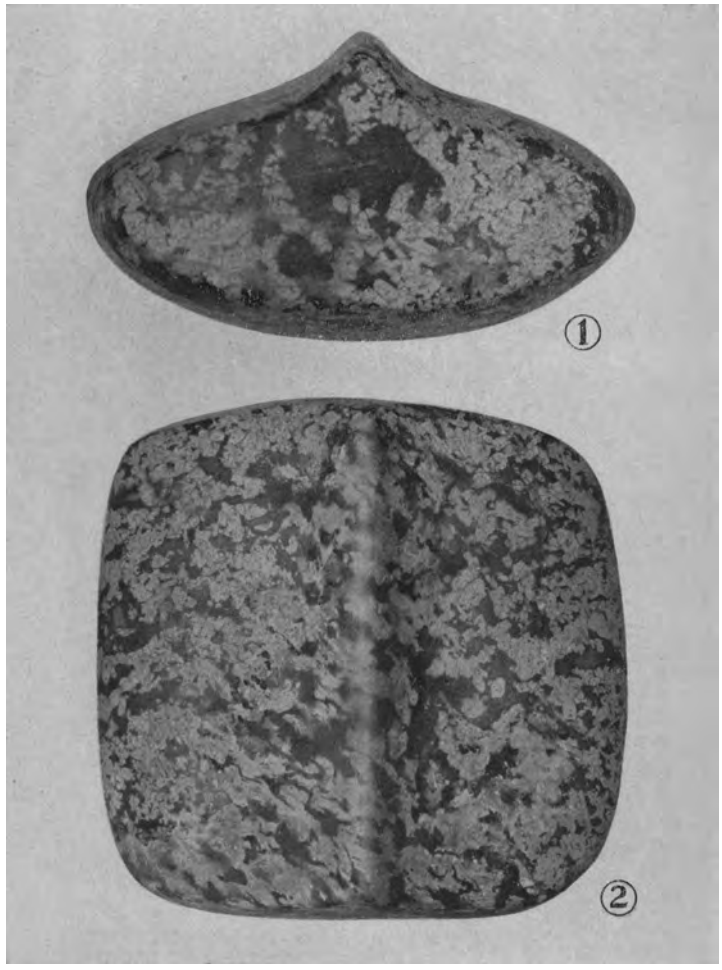


PLATE 146.

Jackson County, Illinois. Material, black and white mottled granite. Hinge-type blending form, found on the surface in 1938. No evidence of drilling. Note this object corresponds in shape to No. 2 in Plate 145.

Plate 2/3 actual size. IRVIN PEITHMAN COLLECTION, CARBONDALE, ILL.

REEL GROUP

TYPE No. 10

The *Reel Group* and four other type groups were developed from a simple shaped *bi-face* pattern, the *Southern Double-edged Primary Form No. 3*. The evolution of each of the five differently designed patterns which comprise these five groups is exceptionally easy to follow. By referring to page 152 one can follow the evolution of each design by the pen-and-ink drawing. This drawing shows that the design of each type of the five groups was brought about in a different manner by changing the construction of the *Southern Double-edged Primary Form No. 3*.

The construction of this simple primary form shows that the two ends are flat planes. The two side planes or faces are shaped into convex planes that meet and form two sharp edges or blades. An end or cross-sectional view of this design is a canoe-shape. These patterns have been named *Double-edged* because of this construction.

The *Reel* patterns were developed by a simple change upon the design of this primary form. The two straight edges were changed into indented or curved edges. Thus this change was the beginning of the development of the *Reel Group*. These concave edges became more and more pronounced until the design of the specimens, which are regarded as types, was achieved.

The specimens illustrated in Plate 149 and 150 are composed of blending forms, and are particularly interesting. By observing the diversity of shapes of those shown in these two plates, one can easily follow the evolution of this group, and trace the origin of the *Reel* design to the primary form. These early made patterns are made of various materials including limonite, red hematite, sandy shale, ferruginous slate, banded-slate, and more rarely unattractive plain granite materials.

Plates 149 and 150 also illustrates a large number of higher developed blending forms which consists of many variations. The concaved edges

(Continued on Page 320)

EXPLANATION OF PLATE 147

REEL AND DOUBLE BITTED AXE GROUPS

Primary Forms No. 3 and Blending Forms of Various Materials from the Primary, Southern and Heart Areas

CLASS A AND B SPECIMENS

Plate 2/5 actual size

No. 1—TAZEWELL COUNTY, ILLINOIS. Material, dark banded-slate. Undrilled. This is a Southern Double-edged Primary Form No. 3. Class A specimen.
C. C. Benedict collection, Decatur, Illinois

No. 2—PICKENS COUNTY, ALABAMA. Material, red hematite. Found near Pickensville. This primary form is unusual because of the groove. Catalogue number 17/2702.
Museum of the American Indian, Heye Foundation, New York, N. Y.

No. 3—GEORGIA, County unknown. Material, slate. Catalogue number 2/27. Plate No. 3. Double Bitted Axe, blending form. Class B specimen.
The American Museum of Natural History, New York, N. Y.

No. 4—JEFFERSON COUNTY, ILLINOIS. Material, red mottled granite. Found near Big Muddy River. Hollow reed drilling just started. Southern Double-edged Primary Form. No. 3. Class A specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 5—HEMPSTEAD COUNTY, ARKANSAS. Material, green banded-slate. Found in 1928. Class A specimen. *Harry J. Lemley and W. Kendall Lemley, Hope, Arkansas*

No. 6—ALLEGAN COUNTY, MICHIGAN. Material, green banded-slate. Reel blending form
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 7—EATON COUNTY, MICHIGAN. Material, green banded-slate. Class A specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—KNOX COUNTY, INDIANA. Material, banded-slate. Primary form No. 3. Class A specimen. *Thomas J. Dillingham collection, Boonville, Indiana*

No. 9—ALLEGAN COUNTY, MICHIGAN. Material, green banded-slate. Class A specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 10—LOGAN COUNTY, OHIO. Material, blue banded-slate. Reel blending form.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 11—ALLEGAN COUNTY, MICHIGAN. Material, light banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 12—CASS COUNTY, ILLINOIS. Material, green banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 13—JEFFERSON COUNTY, TENNESSEE. Material, light banded-slate. Neg. No. 24581-D. Case 18 I. Sayles.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

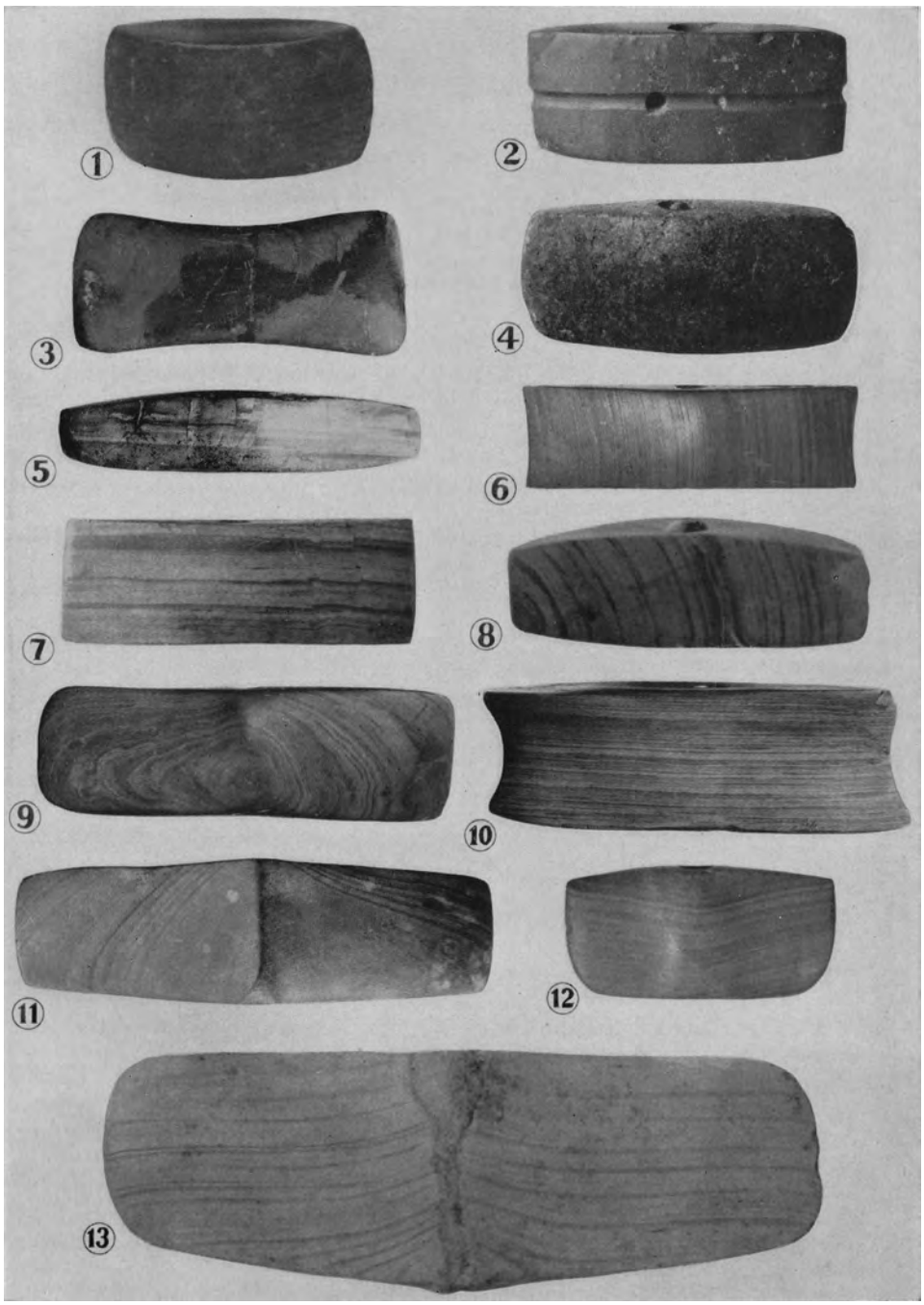


PLATE 147 311

EXPLANATION OF PLATE 148

REEL AND DOUBLE BITTED AXE GROUPS

Primary Forms No. 3 and Blending Forms of Various Materials from the Primary and Lower Ohio Valley Areas

CLASS A AND B SPECIMENS

Plate 1/2 actual size

No. 1—INDIANA, County unknown. Material, purplish slate. Drilling started at one end. Class A specimen. *From the author's collection*

No. 2—MORGAN COUNTY, INDIANA. Material, finely grained gray granite. No evidence of drilling. Double Bitted Axe blending form. *From the author's collection*

No. 3—COLBERT COUNTY, ALABAMA. Material, light greenish gray sandy shale. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 4—COLBERT COUNTY, ALABAMA. Material, light greenish gray sandy shale. Shuttle blending form, because the ends are convex.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 5—CLARK COUNTY, INDIANA. Material, ferruginous slate. Class A specimen.
From the author's collection

No. 6—JOHNSON COUNTY, ILLINOIS. Material, greenish gray shale. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 7—JOHNSON COUNTY, ILLINOIS. Material, green banded-slate, discolored from age. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 8—MONROE COUNTY, ILLINOIS. Material, dark reddish brown banded clay-stone. Shuttle blending form.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 9—MADISON COUNTY, TENNESSEE. Material, dark reddish brown banded clay-stone. Class A specimen.
Mrs. Blanche Busey King collection, Ancient Buried City, Wickliffe, Kentucky

No. 10—COLBERT COUNTY, ALABAMA. Material, gray sandy shale, discolored from age. Reel blending form.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

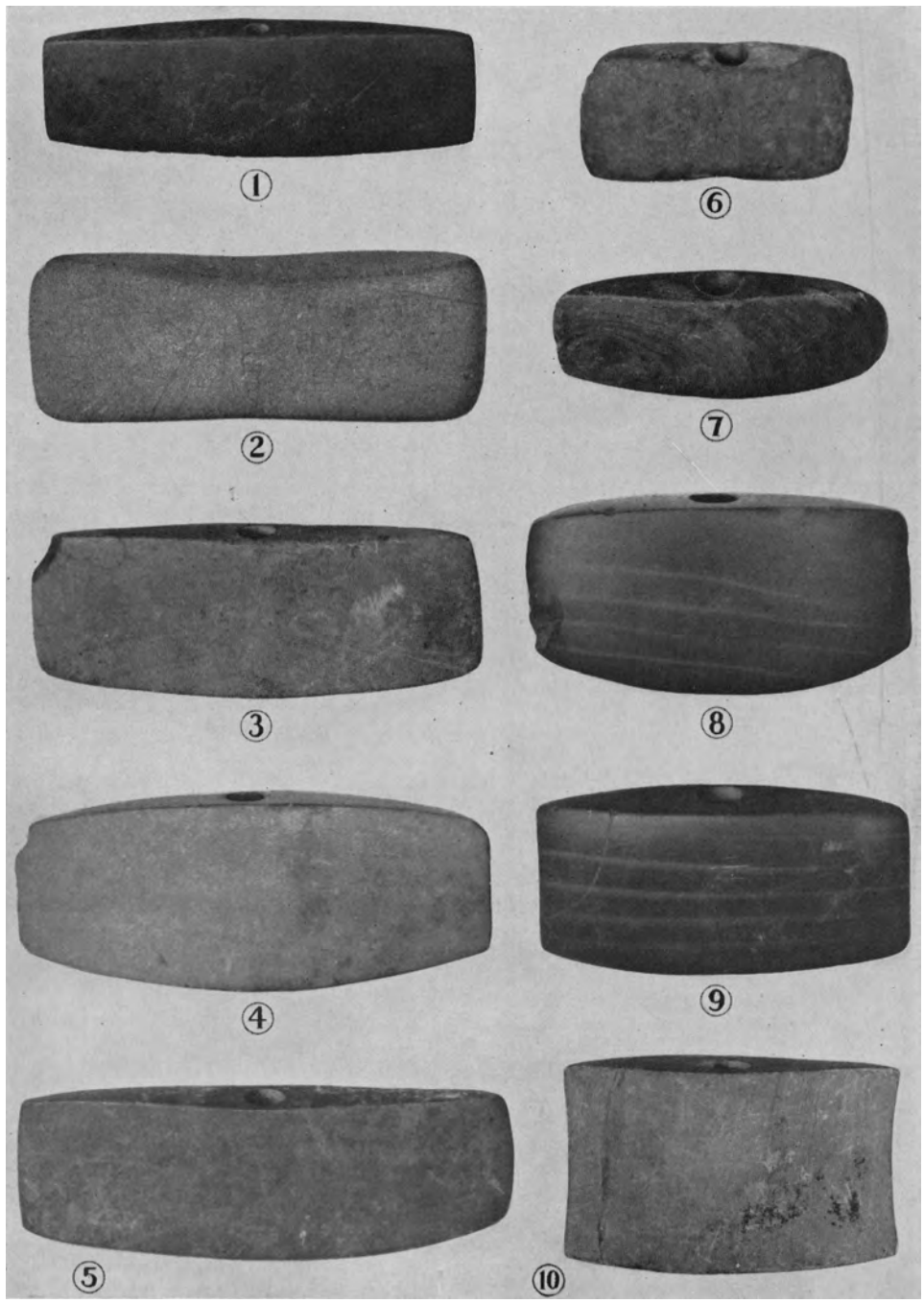


PLATE 148

EXPLANATION OF PLATE 149

REEL GROUP

Primary Forms No. 3 and Blending Forms of Various Banded-slate Materials from the Lower Ohio Valley Area

CLASS A AND B SPECIMENS

Plate 5/9 actual size

No. 1—Boyle County, Kentucky. Material, brown ferruginous slate. A small conical depression is drilled 1/4 inch deep on one end. Primary form No. 3. Class A specimen. *From the author's collection*

No. 2—Holmes County, Ohio. Material, green banded-slate. Found near the town of Millersburg. Blending form. Class B specimen. *Phillip C. Schupp collection, Chicago, Illinois*

No. 3—Marion County, Tennessee. Material, gray slate. Catalogue number 782. Acc. No. 119 Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 4—Henry County, Indiana. Material, green banded-slate. Prairie Twp. Catalogue number 676. Acc. No. 14. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 5—Rush County, Indiana. Material, blue banded-slate. Catalogue number 24. Acc. No. 14. Class B specimen. *Indiana Historical Society collection, Indianapolis Indiana*

No. 6—Clinton County, Michigan. Material, blue banded-slate. Greenbush Twp. Catalogue number 555. Acc. No. 13. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 7—Seneca County, Ohio. Material, green banded-slate. Class B specimen. *Con Foster Museum collection, Traverse City, Michigan*

No. 8—Auglaize County, Ohio. Material, green banded-slate. Class B specimen. *Phillip C. Schupp collection, Chicago, Illinois*

No. 9—Michigan, County unknown. Material, blue banded-slate. Catalogue number 557. Acc. No. 13. Class B specimen. *Indiana Historical Society collection, Indianapolis, Indiana*

No. 10—Henry County, Indiana. Material, green banded-slate. Blending form. Class B specimen. *Phillip C. Schupp collection, Chicago, Illinois*

No. 11—Southeast Oklahoma, County unknown. Material, dark green banded-slate. This specimen is very unusual because it is barreled through the middle. For this reason this object is more closely related to the Rectangular Barreled Group than to this group. It was placed in this plate because of the fact it is made of banded-slate. Class B Specimen. *George Bedford collection, Morris, Illinois*

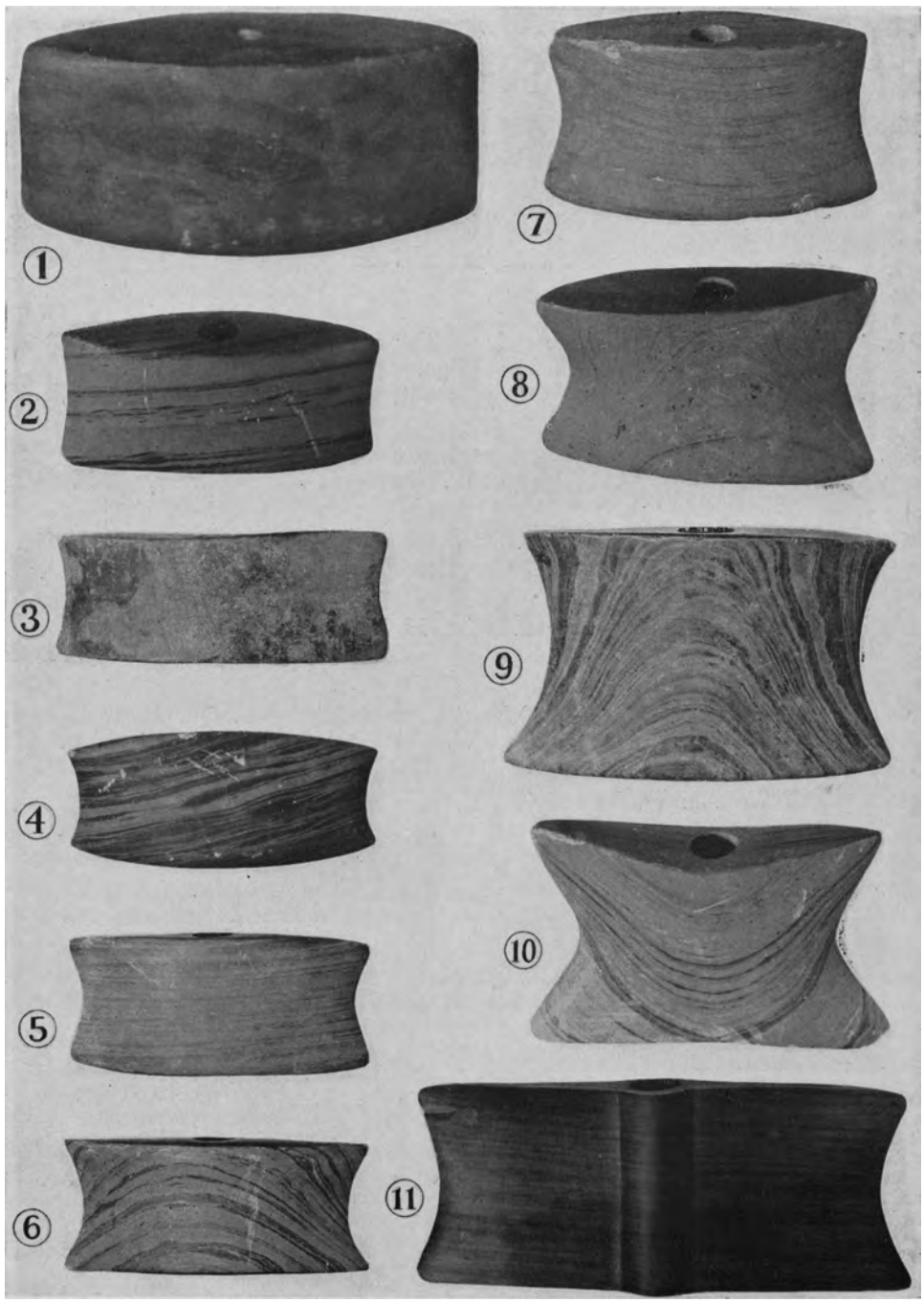


PLATE 149

EXPLANATION OF PLATE 150

REEL GROUP

Blending Forms of Various Slate Materials, mainly from the Southern and Middle Ohio Valley Areas

CLASS B SPECIMENS

Plate 5/11 actual size

No. 1—WAYSIDE, NORTH CAROLINA. Material, probably slate. Negative No. 29277. Catalogue number 247322. P. A. Calhoun.
Smithsonian Institution, United States National Museum collection, Washington ,D. C.

No. 2—GREEN COUNTY, KENTUCKY. Material, green banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 3—JEFFERSON COUNTY, MISSISSIPPI. Material, red hematite. Negative No. 5/3698.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 4—STEUBEM COUNTY, NEW YORK. Material, light green banded-slate.
Dr. A. W. Pendergast, Fairbury, Illinois

No. 5—FRANKLIN COUNTY, INDIANA. Material, green banded-slate. Found near the town of Brookville. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 6—WILLIAMS COUNTY, OHIO. Material, green banded-slate.
N. E. Carter collection, Elkhorn, Wisconsin

No. 7—ALLEGAN COUNTY, MICHIGAN. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—HILLSDALE COUNTY, MICHIGAN. Material, green banded-slate, discolored from age.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 9—PAULDING COUNTY, GEORGIA. Material, probably banded-slate. Negative No. 9/2543. *Museum of the American Indian, Heye Foundation, New York, N. Y.*

No. 10—NEW YORK STATE, County unknown. Material, slate. Plate 3. Catalogue No. 13/177. *The American Museum of Natural History, New York, N. Y.*

No. 11—SMITH COUNTY, TENNESSEE. Material, pale green sandy shale, discolored from age. No evidence of drilling. Collected by the author.
Con Foster Museum collection, Traverse City, Michigan

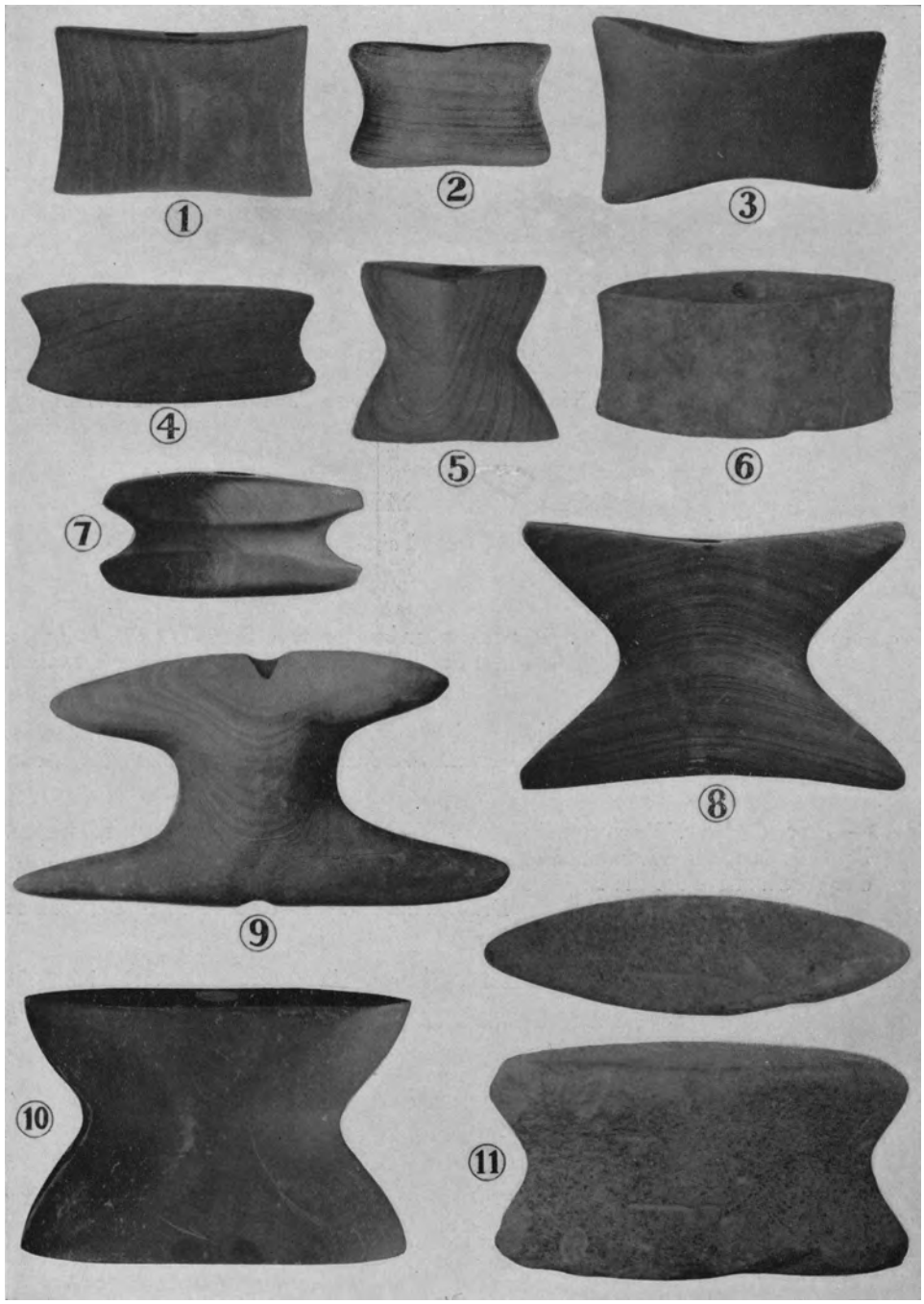


PLATE 150

EXPLANATION OF PLATE 151

REEL GROUP

Types No. 10 of Banded-slate Material from the Heart Area and Upper Mississippi Valley Area

CLASS C SPECIMENS

Plate 5/7 actual size

No. 1—WAYNE COUNTY, INDIANA. Material, green banded-slate. Size 3 1/2 x 1 1/2 inches.
Dr. Rolland H. Bunch collection, Muncie, Indiana

No. 2—WILSON COUNTY, TENNESSEE. Material, blue banded-slate. Size 5 3/4 x 1 7/8 inches.
E. L. Renno collection, St. Charles, Missouri

No. 3—DODGE COUNTY, WISCONSIN. Material, blue banded-slate. Size 6 1/2 x 1 1/2 inches. Formerly in the E. W. Payne collection, Springfield, Illinois. This specimen and the one shown above are the largest and finest so far observed by the author.
Dr. Rolland H. Bunch collection, Muncie, Indiana

No. 4—CRAWFORD COUNTY, OHIO. Material, light green banded-slate. Negative No. 3021
L. C. Snyder collection, Lacona, New York

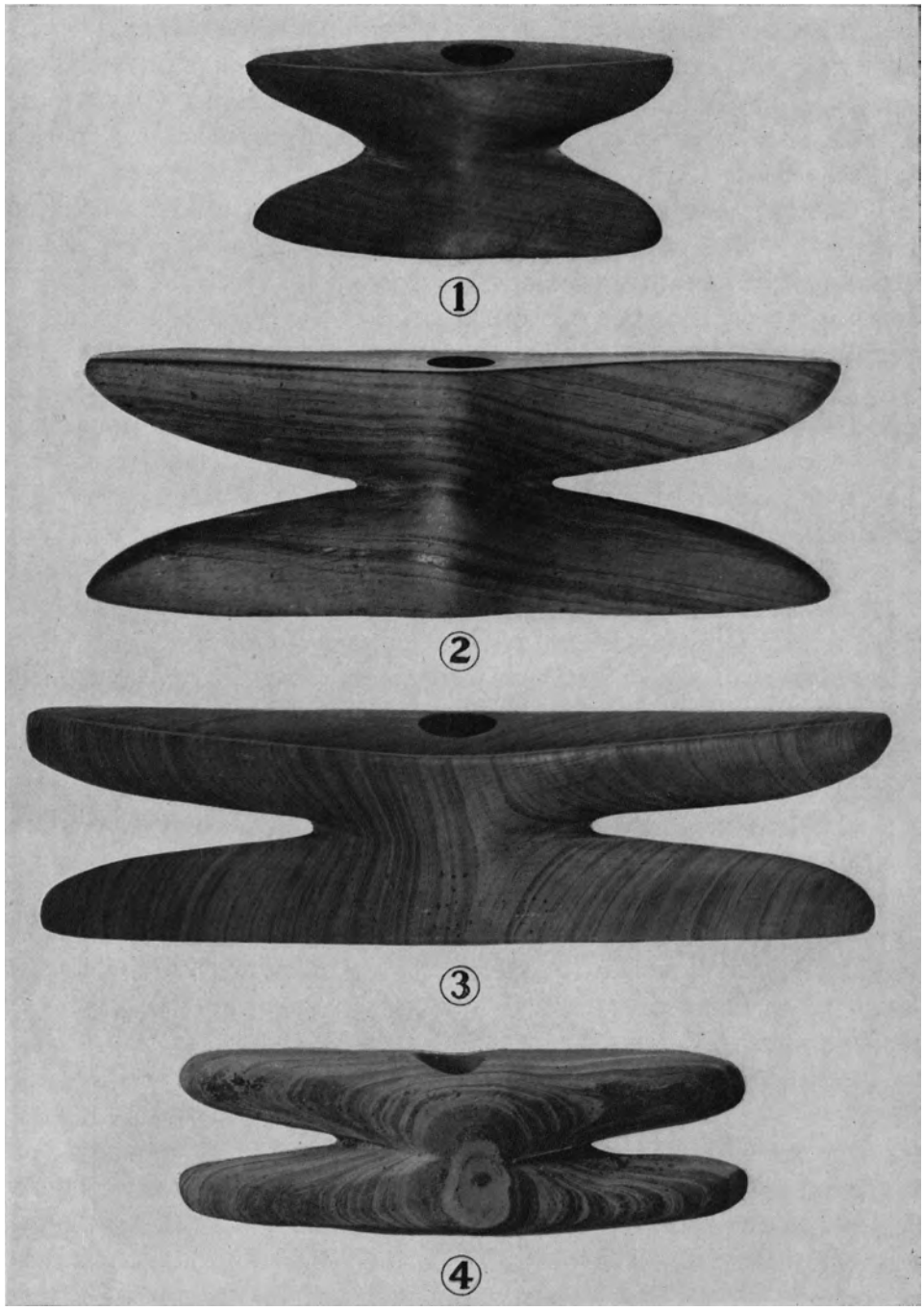


PLATE 151

on some of these specimens are more pronounced than on others. Usually the later made patterns are made of various slate materials, including mainly the banded and unbanded varieties. Only occasionally were these patterns made of ferruginous slate. The specimens illustrated in this plate are from the Southern, Lower Ohio Valley, and Heart Areas.

The type specimens are exceedingly rare and only four are illustrated in Plate 151. The writer was unable to locate any more. Possibly others could have been located by a more thorough search. But these four specimens are sufficient to show the construction of those which are so highly specialized. Those so far observed are made of banded-slate.

This group obtained the name *Reel*, because of the fact that the design of some of the patterns appears to be similar in outline to that of a reel. Many individuals have believed that these patterns, particularly those highly developed, were actually used as a reel on which was wrapped the string for weaving or the lines for fishing. Of course, this theory can not be regarded seriously. Naturally it would have been a much easier task to make such objects from wood than from stone. But just why the type specimens are so designed one cannot say. On page 368 and 369 a theory is advanced concerning a ceremonial reason why the Double Crescent patterns were probably designed with four prongs.

Other individuals have also believed that the *Reel* patterns were made from *Double Crescent* specimens which had their extending wings broken off. The *Reel* design was then created by grinding down the broken *Double Crescent* patterns in such a manner that two flat planes were produced, thus forming two ends similar to those of the *Reel* patterns. Such a salvaging procedure was possible of course. Furthermore, it might have been done. But there is no reason for anyone not to believe that this design was created only through evolution. There are far too many blending forms to believe otherwise.

Judging from the location of discovery of the four type specimens illustrated in Plate 151, it appears that this group reached its highest development within the Heart Area. One will note that specimen No. 3 is from Dodge County, Wisconsin. There is no doubting that this particular object was probably carried to Dodge County, Wisconsin, from the state of Indiana or Ohio. This is the most highly developed type specimen so far observed, and shows remarkable workmanship.

DOUBLE BITTED AXE GROUP

TYPE No. 11

The origin of this group of banner-stones can be easily traced to the *Southern Double-edged Primary Form No. 3*, the same simply shaped pattern which was responsible for the development of the previously described type group.

These particular patterns obtained the name *Double Bitted Axe*, because of their construction. The extending wings of some of the ultimate designs are flared into two edged blades, similar in shape to the blades of some of the double-bitted axes used by woodsmen. For this reason these objects have been named *Double Bitted Axe*.

The design of the patterns which comprise this group was created in a very simple manner by changing the flat planes of the two ends of the *Double-edged* primary form into two curved or concave ends. The ends of the early designed blending forms were curved only slightly, but as this design developed the curvature of the ends became more and more pronounced and the blades more flared. During the time the blades of the blending forms were becoming more flared, the shape of the edged blades were also being changed from a straight or slightly convex curve into a more pronounced curve. The *Double Bitted Axe* patterns can easily be identified by the plane on each end, even though the curvature is slight or extreme. The evolution of this design can be easily followed by referring to the pen-and-ink drawings illustrated on page 152.

The blending forms occur most abundantly within the Heart Area, and are usually made of banded-slate. Frequently these patterns are also found in the central and western part of Kentucky and Tennessee, and southern Illinois.

There is a considerable difference in the shape of blending forms. Those from one section of the Heart Area will differ in shape from those of another section. Yet those which show variations still have the same lines and planes.

Plates 152 and 153 show quite a large number of blending forms which occur in a certain section of the Heart Area, including the southern part of Michigan, the state of Indiana, and the western part of Ohio. One can note that the design of these specimens is somewhat different from the design of the other blending forms from other sections of the Heart Area. This difference probably can be attributed to the fact that these particular patterns belong to a different phase from those found in other sections.

The type specimens also show many variations, including those with long extended and slightly flared blades, and those which have rather short blades that are exceptionally wide and extremely flared in shape. Frequently the edge of each blade of some of these patterns is convex in shape to the extent that they form a perfect semicircle in outline.

Variations with the long extended and slightly flared blades are quite rare and only four are illustrated in Plate 155. A rather large number of variations with the wide and extremely flared blades are shown in Plates 154, 156 and 157.

The planes of the two faces of these *bi-face* patterns are also varied in their construction, particularly those which are highly developed. The faces of the majority of the type specimens are slightly convex planes, while others have a pronounced raised ridge through the middle on each face parallel to the perforation. Thus the types are comprised of two variations. Those with the ridged faces are far rarer than those which have no ridge.

The usual material used for the making of the ultimate designs or types was banded-slate. The writer has come in contact, however, with several type specimens which were made from other kinds of stone, and two are shown in Plate 154. Note that No. 6 is made of hard compact sandstone and No. 8 is made of greenish-black and white speckled granite.

There is a possibility that the people who made these patterns were beginning to adopt harder and more beautifully marked stone, such as speckled or spotted granite, for the making of the ultimate designs to add to their ceremonial significance. The adoption of special materials can be noted in many of the other type groups.

Therefore, one may believe that if the custom of making banner-

stones had not ceased so soon, a special material, such as, spotted granite, probably would have been adopted for the making of these patterns.

Why a great many individuals become confused when it is necessary for them to use the correct terminology, *Double Bitted Axe*, for these patterns seems an inscrutable mystery. Frequently these particular type specimens are classified as *Double Crescent* patterns. There is no need for this error in classification since it is so easy to identify the *Double-Crescent* patterns by the notch in the middle of the edge of each blade.

The line and planes of the ultimate *Double Bitted* Axe patterns and those of the *Notched Ovate* patterns from the Heart Area correspond to a certain extent. This merging of different type designs is very remarkable because these two ultimate designs have developed independently of each other from differently shaped primary forms.

The type specimen of copper illustrated in Plate 157 is probably the only object of its kind so far discovered. A thorough description of this remarkable specimen is given in the accompanying data by Charles E. Brown. The mere fact that this banner-stone is so highly developed, and because it is made of copper, again may signify that another attempt was probably made to adopt some other material other than banded-slate for the making of these patterns.

This conclusion automatically places the age of this specimen in the later phase of the Banner-Stone Era. This period may be estimated as having occurred between three to five hundred years ago.

There is a possibility that this object is of remote antiquity because of the stratigraphic conditions under which it was discovered. Even though it was discovered six feet below the surface in sand, a considerable distance from Lake Michigan, there are but two theories why it was made in this design.

First theory: The design of this copper object corresponds to the design of the ultimate *Double Bitted Axe* patterns which are made of stone. Therefore, is it not logical for one to believe that it was probably made during the time when those of stone were made?

Although this object was discovered far below the original surface, there still is no reason why this stratigraphic condition should govern its estimated age. We must not overlook the fact that it was discovered in the sand which could have been deposited by wind within a short time.

(*Continued on Page 336*)

EXPLANATION OF PLATE 152

DOUBLE BITTED AXE GROUP

Double Bitted Axe Blending Forms of Banded-slate from the Heart Area

CLASS A AND B SPECIMENS

Plate 1/2 actual size

No. 1—HILLSDALE COUNTY, MICHIGAN. Material, dark banded-slate. Primary form. Class A specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 2—WILLIAMS COUNTY, OHIO. Material, light green banded-slate. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—HILLSDALE COUNTY, MICHIGAN. Material, light banded-slate. Blending form Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 4—NOBLE COUNTY, INDIANA. Material, green banded-slate. Blending form. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 5—HILLSDALE COUNTY, MICHIGAN. Material, dark green banded-slate. This specimen can be classified as a Double Bitted Axe blending form because of the fact it is found in the Heart Area and made of banded-slate, although it resembles the Southern Rectangular Primary Form No. 5. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 6—ALLEGAN COUNTY, MICHIGAN. Material, banded-slate, bleached light tan from age. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 7—CASS COUNTY, MICHIGAN. Material, dark banded-slate. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 8—BRANCH COUNTY, MICHIGAN. Material, green banded-slate. Size 3 3/4 inches wide. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

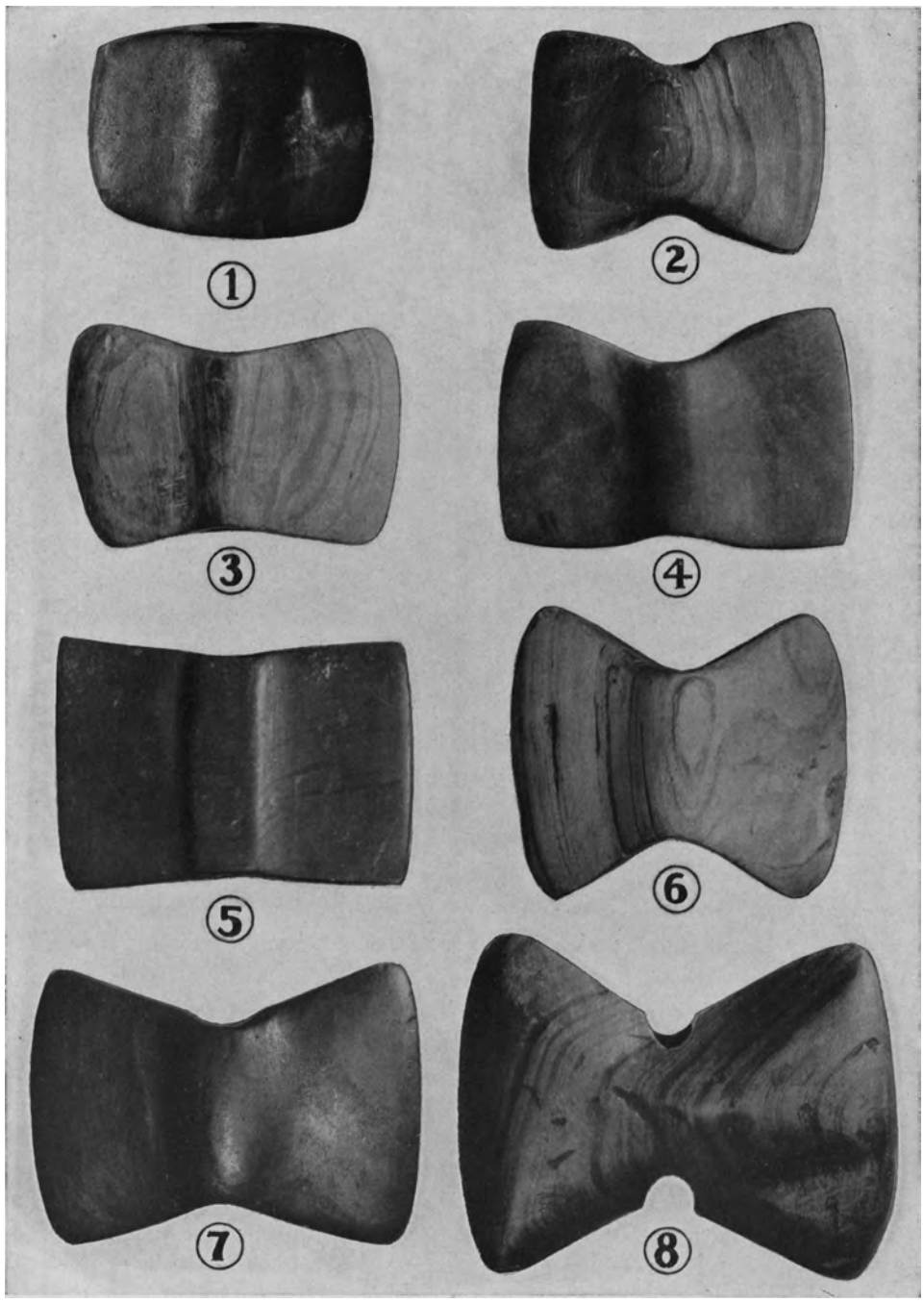


PLATE 152

EXPLANATION OF PLATE 153

DOUBLE BITTED AXE GROUP

Blending Forms of Various Materials from the Heart Area and Middle and Upper Mississippi Valley Areas

CLASS B SPECIMENS

Plate 2/5 actual size

No. 1—ALLEN COUNTY, OHIO. Material, green banded-slate.
Formerly in the Leslie Hill collection, Fort Wayne, Indiana

No. 2—KOSCIUSKO COUNTY, INDIANA. Material, dark slate. Catalogue number 24.
C. E. Sisk collection, Sydney, Indiana

No. 3—KOSCIUSKO COUNTY, INDIANA. Material, red banded-slate. Found near Hill Lake.
C. E. Sisk collection, Sydney, Indiana

No. 4—JOHNSON COUNTY, IOWA. Material, purplish red slate.
N. E. Carter collection, Elkhorn, Wisconsin

No. 5—MICHIGAN, County unknown. Material, slate. Plate 5. Catalogue number D/M1278.
American Museum of Natural History, New York, N. Y.

No. 6—CLARK COUNTY, OHIO. Material, light buff limestone. Found with a tubular pipe in a burial near Tremont City in 1933 by Arthur R. Altick. Catalogue number 19.
Arthur R. Altick collection, Springfield, Ohio

No. 7—WARREN COUNTY, OHIO. Material, black slate bleached gray from age.
From the author's collection

No. 8—SHEBOYGAN COUNTY, WISCONSIN. Material, gray slate.
Logan Museum, Beloit College collection, Beloit, Wisconsin

No. 9—OHIO COUNTY, KENTUCKY. Material, purplish red slate.
G. I. Groves collection, Chicago, Illinois

No. 10—PEORIA COUNTY, ILLINOIS. Material, ferruginous slate. Found near Glasford.
Claude U. Stone collection, Peoria, Illinois

No. 11—PIKE COUNTY, ILLINOIS. Material, brown quartzite. Undrilled.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 12—DOOR COUNTY, WISCONSIN. Material, slate.
Logan Museum, Beloit College collection, Beloit, Wisconsin

No. 13—ST. JOSEPH COUNTY, INDIANA. Material, banded-slate. Neg. No. 24581E-136996.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 14—WISCONSIN, County unknown. Material, hornblende schist.
Logan Museum, Beloit College collection, Beloit, Wisconsin

No. 15—ERIE COUNTY, PENNSYLVANIA. Material, dark banded-slate.
W. C. Fuellhart collection, Tidioute, Pennsylvania

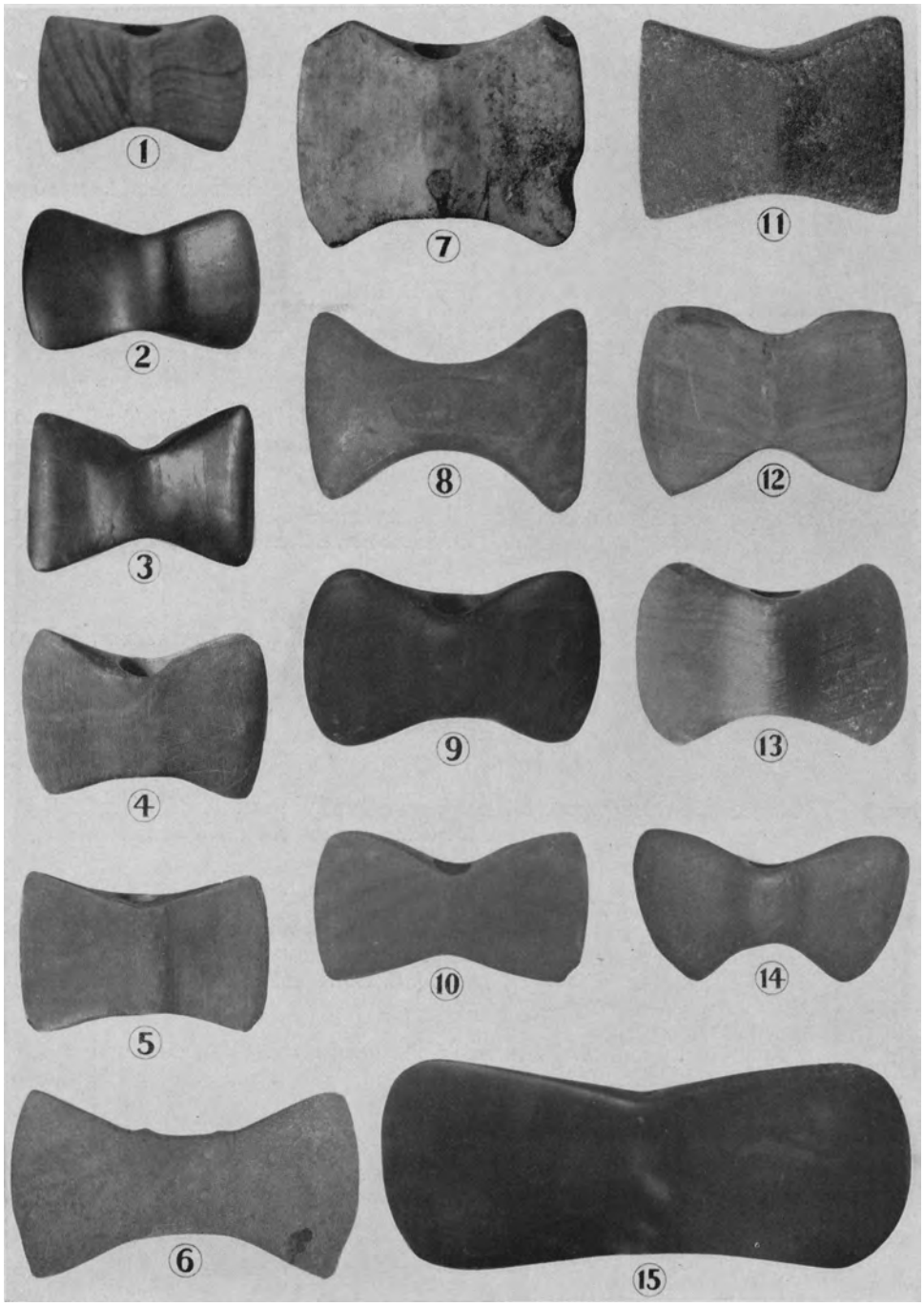


PLATE 153

EXPLANATION OF PLATE 154

DOUBLE BITTED AXE GROUP

Types No. 11 with Wide Expanding Blades of Various Materials from the Heart Area and Middle Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—EATON COUNTY, MICHIGAN. Material, green banded-slate. Size 3 3/4 x 2 5/8 in.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—EATON COUNTY, MICHIGAN. Material, green banded-slate. Size 3 3/4 x 3 1/8 in.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—ALLEN COUNTY, INDIANA. Material, green banded-slate.
Formerly in the Leslie Hill collection, Fort Wayne, Indiana

No. 4—JACKSON COUNTY, MICHIGAN. Material, dark banded-slate. Size 4 3/4 x 3 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—TAZEWELL COUNTY, ILLINOIS. Material, green banded-slate. Size 5 1/4 x 2 3/4 in.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 6—HANCOCK COUNTY, ILLINOIS. Material, light colored hard compact sand-stone, mottled brown from age. Size 4 3/8 x 3 1/4 inches. Double Bitted Axe type specimens made of any material other than banded-slate are extremely rare.
N. E. Carter collection, Elkhorn, Wisconsin

No. 7—ALLEN COUNTY, INDIANA. Material, green banded-slate. Catalogue number 1268. Size 6 1/2 x 4 1/4 inches. *From the author's collection*

No. 8—OHIO COUNTY, KENTUCKY. Material, black and white speckled granite, discolored tan from age, highly polished. Catalogue number 50. Size 3 3/4 x 3 1/8 inches.
From the author's collection

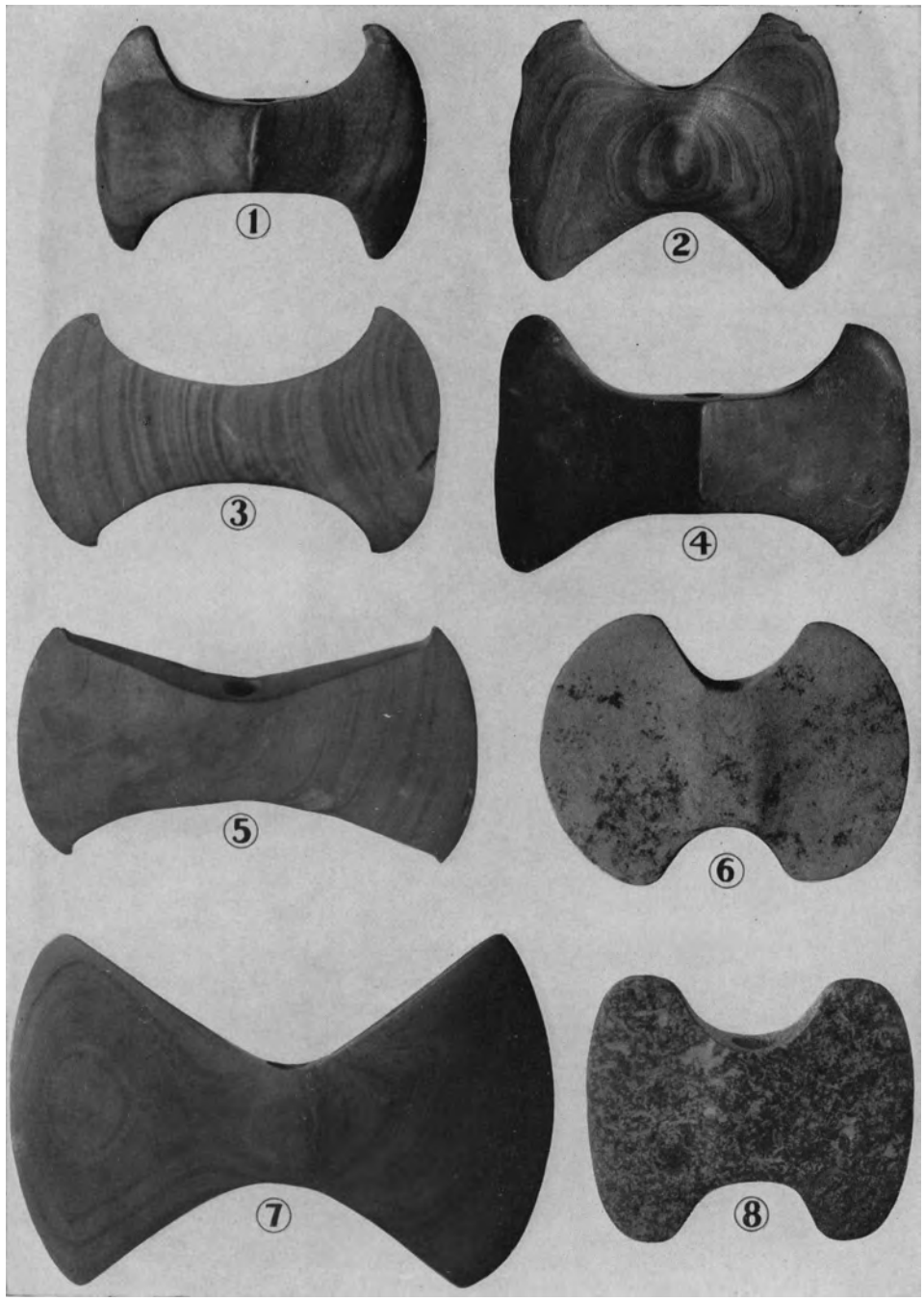


PLATE 154

EXPLANATION OF PLATE 155

DOUBLE BITTED AXE GROUP

Types No. 11 with Long Extended and Slightly Flaired Blades of Banded-slate from the Heart Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—WASHTENAW COUNTY, MICHIGAN. Material, light green banded-slate. Size 5 x 1 3/4 inches. Formerly in the author's collection.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—DARKE COUNTY, OHIO. Material, green banded-slate. Size 5 1/2 x 2 1/8 inches.
The Ohio State Archaeological and Historical Society Museum collection, Columbus O.

No. 3—KENOSHA COUNTY, WISCONSIN. Material, green banded-slate. Found near Paris. This is the same specimen shown in Figure 100 in *Stone Ornaments of the American Indian* by Warren K. Moorehead. Size 6 3/8 x 2 1/4 inches.
From the author's collection

No. 4—DANE COUNTY, WISCONSIN. Material, dark green banded-slate. Oregan Twp. Catalogue number A209. Size 6 1/4 x 2 3/8 inches.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

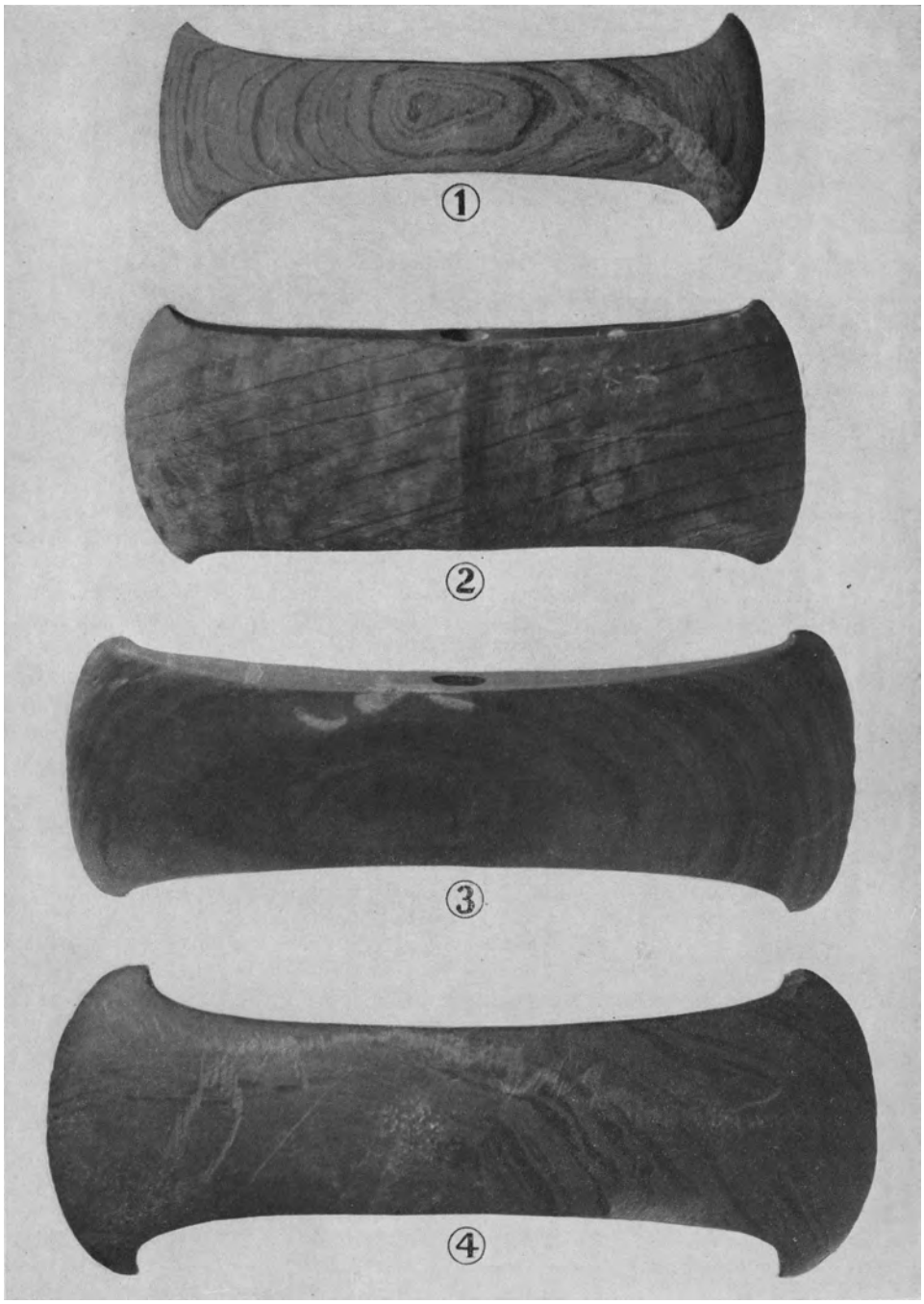


PLATE 155

EXPLANATION OF PLATE 156

DOUBLE BITTED AXE GROUP

Blending Forms and Types No. 11 of Banded-slate Material from the Heart Area

CLASS B and C SPECIMENS

Plate 2/5 actual size

No. 1—WAYNE COUNTY, INDIANA. Material, blue banded-slate. Catalogue number 459. Acc. No. 14. This specimen may be classified as a blending form. Class B specimen.
Indiana Historical Society collection, Indianapolis, Indiana

No. 2—HENRY COUNTY, INDIANA. Material, green banded-slate, perforation absent. Class B specimen. *Dr. Rolland H. Bunch collection, Muncie, Indiana*

No. 3—JAY COUNTY, INDIANA. Material, green banded-slate, discolored from age. Class B specimen. *From the author's collection*

No. 4—BEAVER COUNTY, PENNSYLVANIA. Material, black slate. Class C specimen.
Phillip C. Schupp collection, Chicago, Illinois

No. 5—GRATIOT COUNTY, MICHIGAN. Material, banded-slate. Washington Twp. Catatalogue number 70. Acc. No. 13. Class C specimen.
Indiana Historical Society Collection, Indianapolis, Indiana

No. 6—KANKAKEE COUNTY, ILLINOIS. Material, black slate with very thin wings. Size 4 3/4 x 3 1/8 inches. Wide expanding blades. Class C specimen.
Phillip C. Schupp collection, Chicago, Illinois

No. 7—ISABELLA COUNTY, MICHIGAN. Material, green banded-slate. Catalogue number 68. Acc. No. 13. Size 7 1/8 x 2 5/8 inches. Class C specimen.
Indiana Historical Society collection, Indianapolis, Indiana

No. 8—SHELBY COUNTY, OHIO. Material, green banded-slate. Found near Fort Loraine. Size 5 3/8 x 4 inches. Wide expanding blades. Class C specimen.
G. I. Groves collection, Chicago, Illinois

No. 9—MONTGOMERY COUNTY, OHIO. Material, green banded-slate. Size 6 x 4 1/2 inches. Wide expanding blades. Class C specimen.
Dr. Rolland H. Bunch collection, Muncie, Indiana

No. 10—FOUNTAIN COUNTY, INDIANA. Material, banded-slate, discolored brown from age. Solid stick drilling 1/2 inch deep started from one end. Size 6 1/2 x 4 1/2 inches. Wide expanding blades. Class C specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

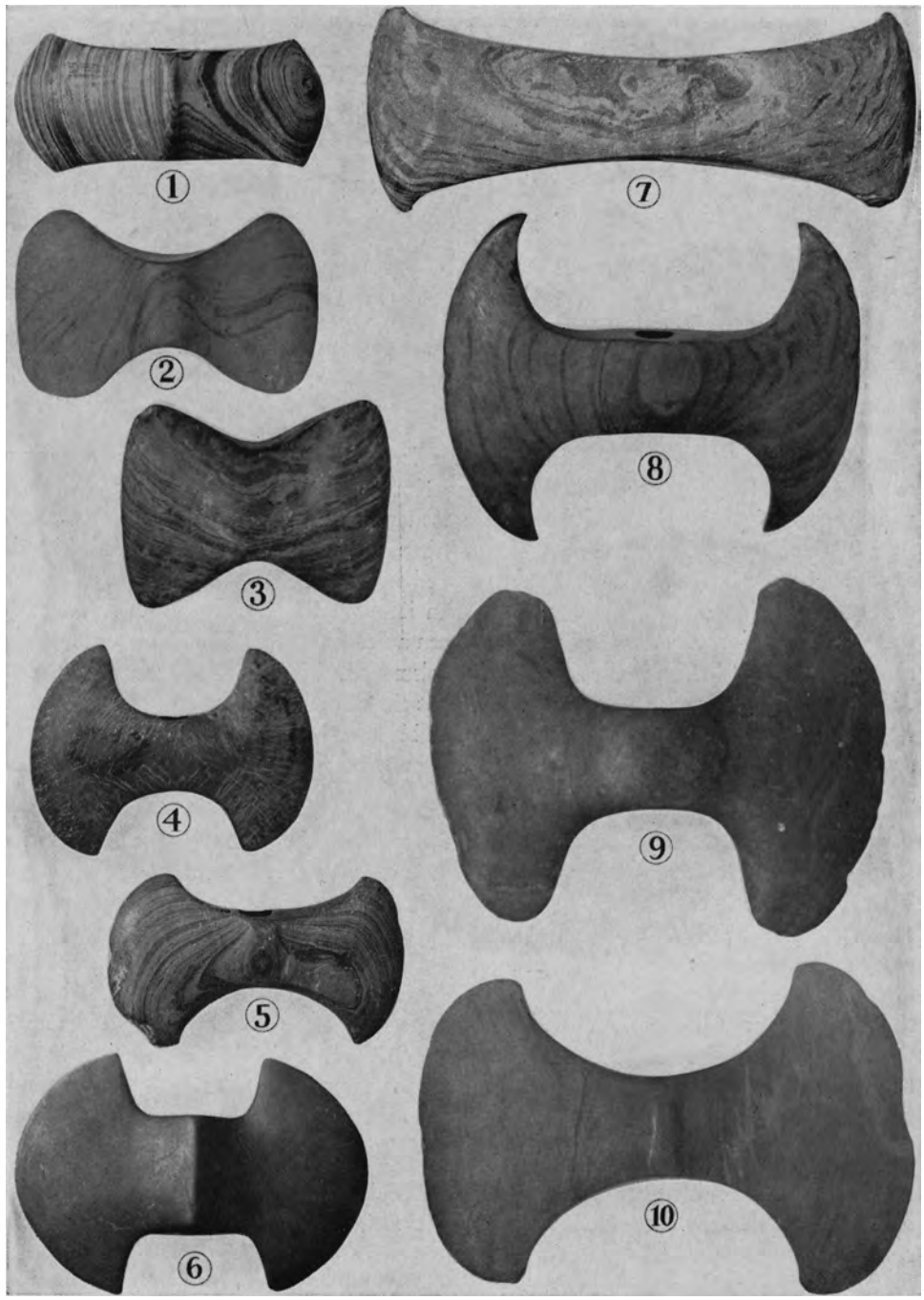


PLATE 156

EXPLANATION OF PLATE 157

DOUBLE BITTED AXE GROUP

Double Bitted Axe Type No. 11 of Copper with Wide Expanding Blades

CLASS C SPECIMEN

Plate actual size

Data reprinted by permission from Charles E. Brown director of The State Historical Society of Wisconsin, from *The Wisconsin Archaeologist* Vol. 15. Quoted as follows:

"On August 1st, 1916, James McCabe a local contractor who was constructing a sewer through Clinton Street in the extreme Northwestern part of the city, noticed a peculiar shaped object shoveled from the trench about 400 feet north of Scott Street. Examination showed that it was of copper and shaped somewhat like the two bladed battle axe of ancient or medieval times. Each cutting edge measured about five inches, while the distance between the two edges at the median line was likewise five inches. Through the center, an eye or hole for the handle had been neatly punched. This orifice was nearly round and about 1/4 inch in diameter. The implement had been fashioned from a plate or flake of native copper nearly half an inch thick at the center, but hammered out very thin on either side as it approached the edge of each blade or bit. The whole outline showed a remarkable symmetry, although slightly rough on the edges from the hammering or from corrosion.

This weapon or ceremonial was found fully six feet below the surface, the entire soil above it except the top six inches, being lake sand such as is washed up by the waves. That this was once a part of the lake shore line is certain, but the six inch deposit of vegetable mold on top of the beach sand makes it likewise certain that the shore line receded many ages ago and the process has been going on steadily until the lake is now a full mile distant at its nearest point. Two theories are possible, one, that the specimen was lost on the lake beach or in the water of the lake centuries ago, and was gradually buried beneath the sand by wave action. The other that this article was buried to the depth of six feet by its aboriginal owner. The first hypothesis means a very remote antiquity, the second, that it may have happened any time prior to 1830 which is about the date when the last Indian village in this region was deserted.

The specimen was purchased from Mr. McCabe by G. R. Moore of Janesville, a dealer in antiquities, who sold it to Mr. Joseph Ringeisen, Jr., the well-known Milwaukee collector."

Milwaukee Public Museum collection, Milwaukee, Wisconsin

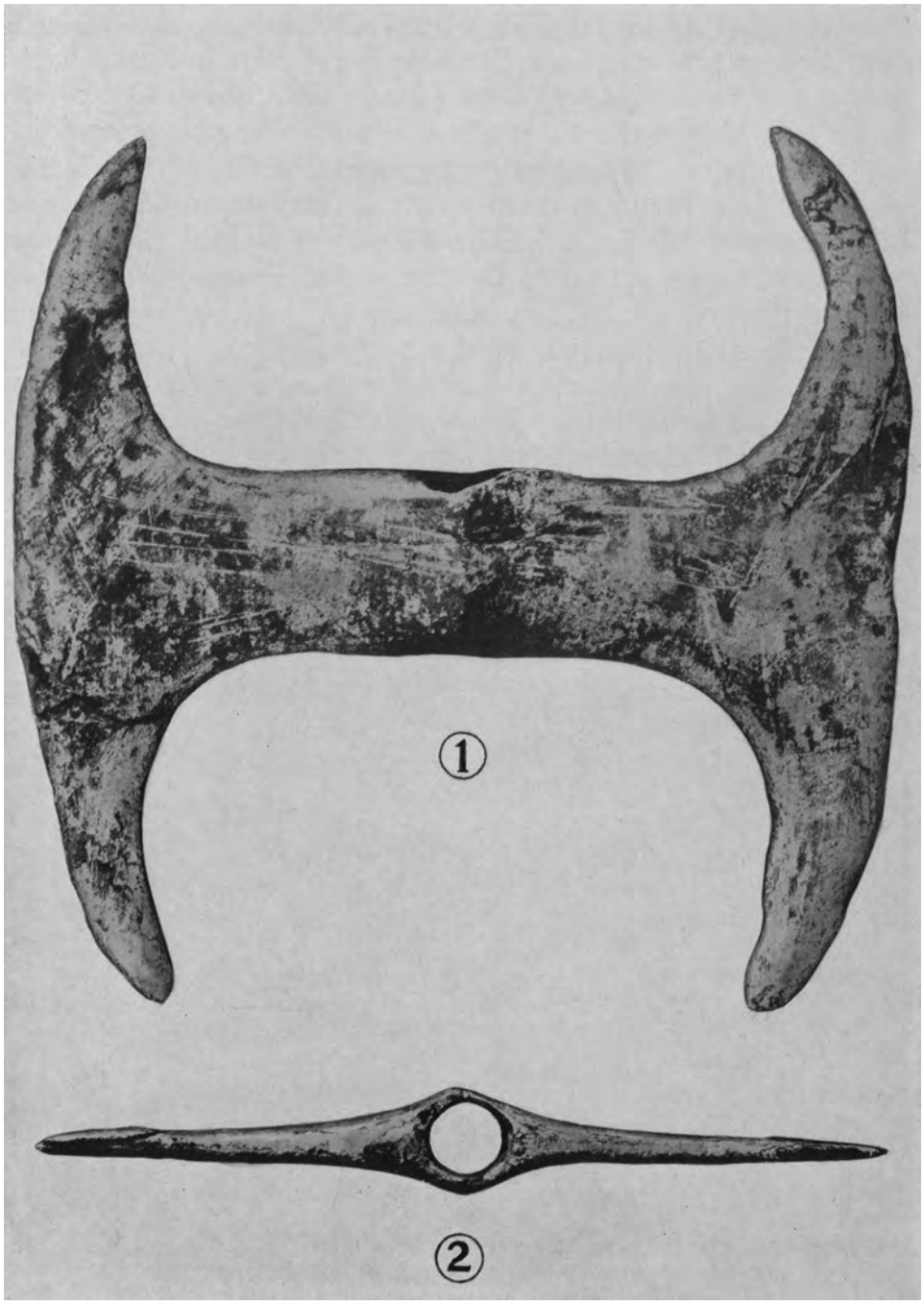


PLATE 157

The contours of the sand dunes in Indiana are continually changing. The dust storms which have occurred during recent years in Kansas furnish another example of rapid deposition of sandy loam. Houses were covered within a few days to the extent that only part of the roofs protruded.

Second theory: It can also be suggested that this copper specimen was made by an Indian at an early time without the knowledge of any banner-stones of this design which were made of stone. Then by mere coincidence it may be assumed that the copper specimen corresponds in shape to those of stone. The writer, however, firmly believes that this theory will not obtain against the first theory.

One might also advance the theory that this copper object was made at a comparatively late time, even after the Banner-Stone Era when banner-stones of this design were made of stone. According to this theory there is no relationship between the copper specimen to those of stone.

Frequently the term *Double Crescent* has been associated to this copper object. According to my system of classifying banner-stones, this term is incorrect, because of the fact the edged-blades of this copper specimen are not notched. For this reason it should be classified as an ultimate *Double Bitted Axe* pattern.

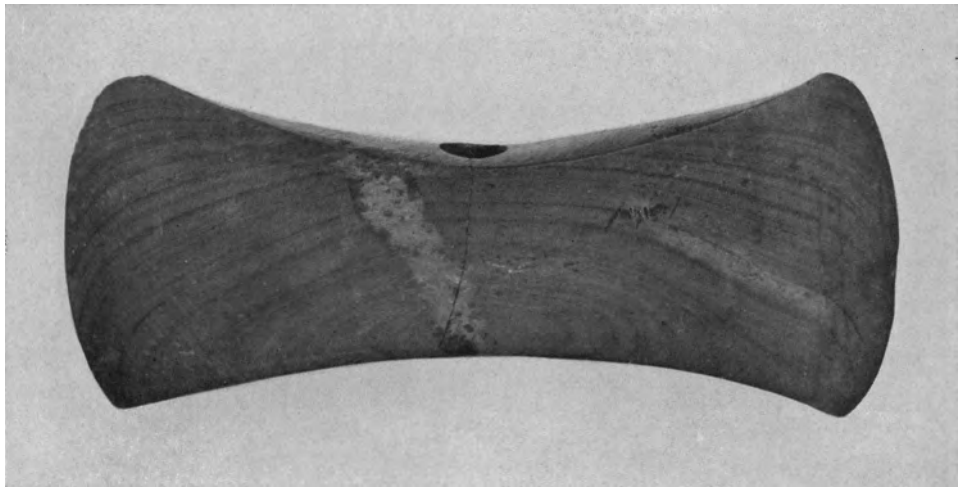


PLATE 158

Southern Ohio, county unknown. Material, banded-slate. Ultimate Double Bitted Axe patterns of this design with long extended and slightly flared blades are very rare. Four similar objects are shown in Plate 155 and 156. Accession, No. 67/44C.
Plate actual size. OHIO STATE ARCHAEOLOGICAL AND HISTORICAL SOCIETY COLL., COLUMBUS, O.

SHUTTLE GROUP

TYPE No. 12

Apparently the banner-stones which comprise this group, particularly those highly developed, have never before been illustrated or described in any book. The omission is due mainly, perhaps, to the fact that these particular patterns are so rare, and their range of distribution is confined to rather a small area. Approximately all of the *Shuttle* specimens encountered are illustrated in Plates 159, 160 and 161.

The writer has adopted the term *Shuttle* as a name for this group, because the design of the highly developed patterns is so similar in shape to that of a shuttle used for weaving. The name adopted may not seem very attractive; but, nevertheless, it is still appropriate for the design. It is, however, possible that other individuals who may have come in contact with these objects, have also used the term *Shuttle* to identify them.

The evolution of the design of these patterns can easily be traced to the *Southern Double-edged Primary Form No. 3*. The origin of the Shuttle design began by changing the flat planes of the two ends of this primary form into curved or convex ends. After observing the evolution of this group by the drawings shown on page 152, one can note the simple manner in which this design developed.

The early made *Shuttle* patterns are those which have but slightly curved or convex ends. But as this design developed the curvature of the ends became more and more pronounced until the two convex curves were made to meet, thus forming two blunt points and eliminating any evidence of the two original blades.

The blending forms can easily be identified from the type specimens by noting the variations of the curvature of the ends. The patterns which still have two edged blades, even though they may be very small, can be classified as blending forms.

(Continued on Page 342)

EXPLANATION OF PLATE 159

SHUTTLE GROUP

Blending Forms and Types No. 12 of Various Materials from the Primary Area and the Lower and Middle Mississippi Valley Areas

CLASS B AND C SPECIMENS

Plate 5/8 actual size

No. 1—St. Charles County, Missouri. Material, deep red granite. One end shows a shallow concave pecked depression, indicating the start of the perforation. This specimen is very interesting because of the convex curvature of the ends that distinctly show the evolutionary step to the development of the Shuttle types, from the simple Rectangular Double-edged primary forms that occur in the Southern Area. Size 3 3/8 x 2 1/8 inches. Class B specimen. *From the author's collection*

No. 2—Ashley County, Arkansas. Material, brown quartzite. Hollow, reed drilling just started. Note that the convex curvature of the two ends are similar to those of the sides, forming a perfect shuttle shape which gives this pattern its name. Because of these characteristics these patterns are Types. The three views of this specimen shows its construction. Class C specimen.

Kyle L. Sly collection, St. Louis, Missouri

No. 3—Obion County, Tennessee. Material, tan indurated claystone. Size 2 3/4 x 1 3/4 inches. Catalogue number 80. Class C specimen. *From the author's collection*

No. 4—Posey County, Indiana. Material, red hematite. Note that the convex curves of the ends are so slight that there still remains a large part of the two edged blades, therefore, this is a blending form. Class B specimen.

B. W. Stephens collection, Quincy, Illinois

No. 5—Southern Alabama. Material, brown limonite. Size 3 x 1 1/2 x 3/4 inches. The two ends are damaged. Class B specimen.

C. A. Hyman collection, Gary, Indiana

No. 6—Osage County, Missouri. Material, bluish black diorite. There is a small break at one end of the perforation, caused, presumingly, by the inserted staff. Size 3 1/4 x 1 5/8 inches. Catalogue number 8841. Class C specimen.

E W. Payne collection, Springfield, Illinois

No. 7—Madison County, Missouri. Material, fine-grained tan sandstone. Size 2 5/8 x 1 1/2 inches. Catalogue number 8816. Class C specimen.

E. W. Payne collection, Springfield, Illinois

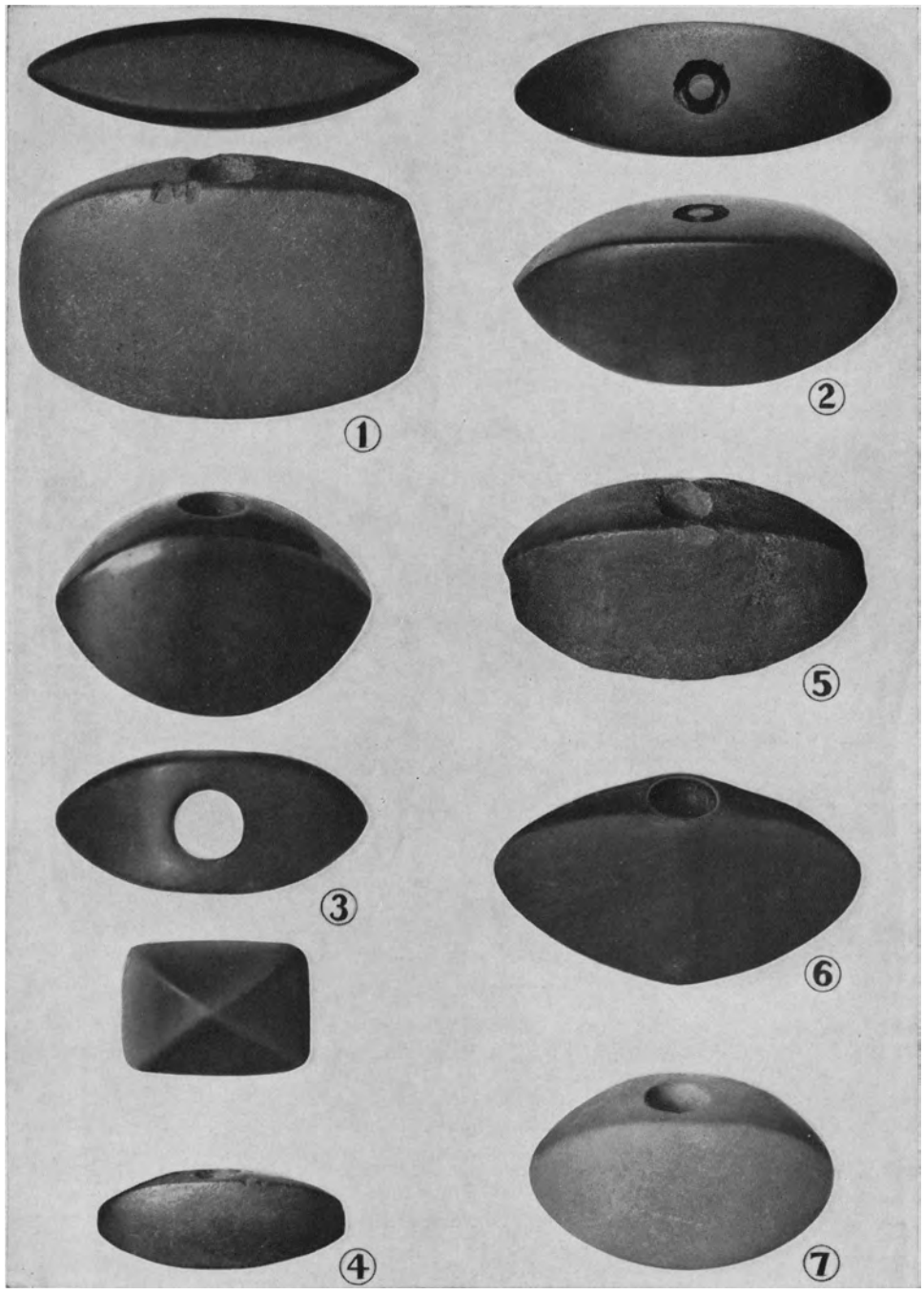


PLATE 159

EXPLANATION OF PLATE 160

SHUTTLE GROUP

Blending Forms and Types No. 12 of Various Materials from the Primary and Lower Ohio River Valley Areas

CLASS B AND C SPECIMENS

Plate 5/9 actual size

No. 1—COLCHESTER COUNTY, ALABAMA. Material, finely grained gray granite, discolored tan from age. Class B specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 2—MCHENRY COUNTY, TENNESSEE. Material, tan compact sandstone, discolored from age. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 3—MARSHALL COUNTY, KENTUCKY. Material, red hematite, incompleted perforation. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 4—MARSHAL COUNTY, KENTUCKY. Material, ferruginous slate. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 5—TENNESSEE, County unknown. Material, green slate. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 6—OHIO COUNTY, KENTUCKY. Material, compact banded-slate. Class B specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 7—UNION COUNTY, KENTUCKY. Material, limonite. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 8—HOPKINS COUNTY, KENTUCKY. Material, ferruginous slate. Class C specimen.
From the author's collection

No. 9—UNION COUNTY, KENTUCKY. Material, limonite. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 10—COLBERT COUNTY, ALABAMA. Material, dark green granite. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 11—MCCRACKEN COUNTY, KENTUCKY. Material, gray sandy shale, incompleted perforation. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 12—COLBERT COUNTY, ALABAMA. Material, dark reddish brown clay-stone.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

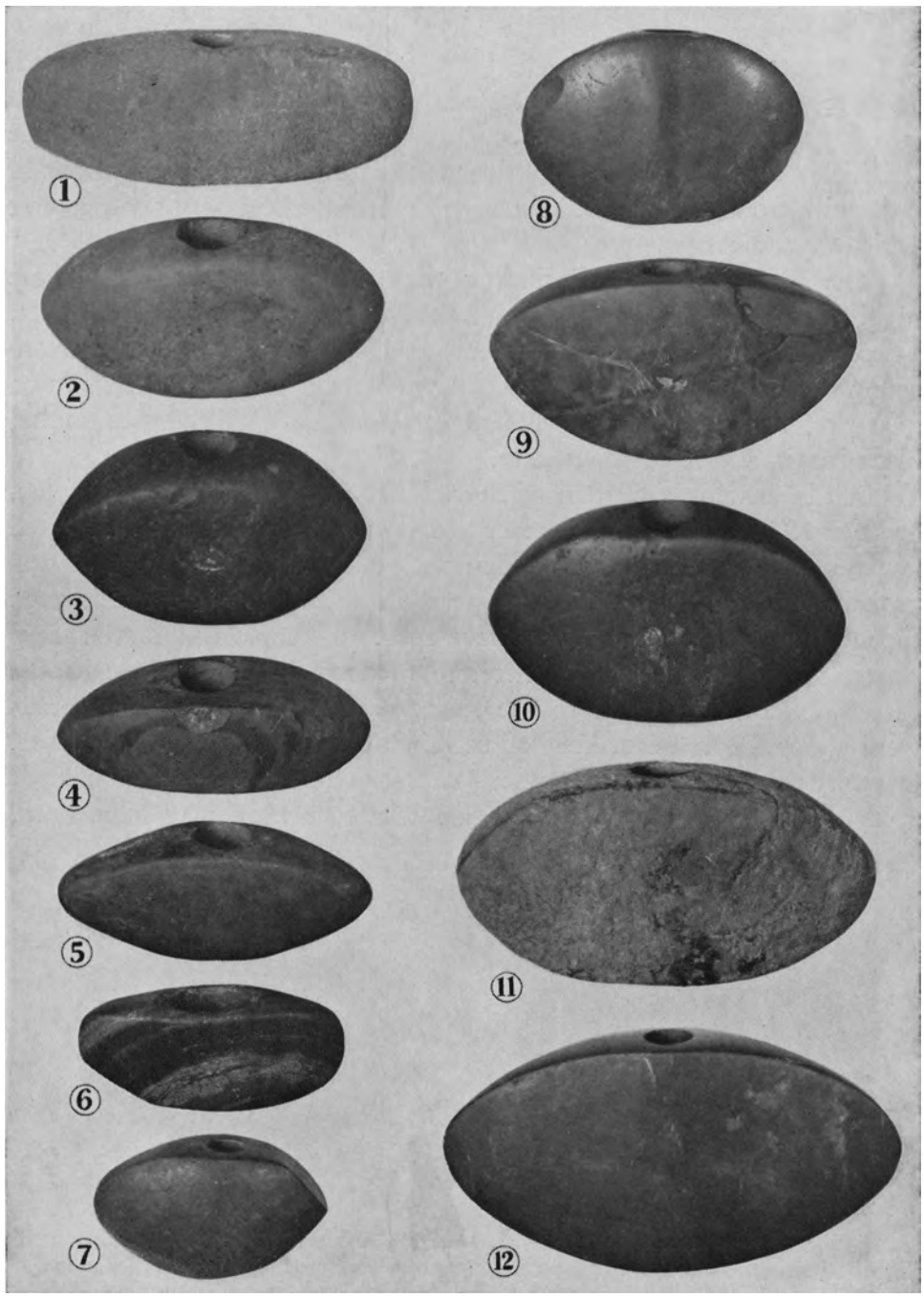


PLATE 160

The type specimens are those which have no blades. The side view of these patterns is the same as that of the end view; that is, canoe shaped. In Plate 159 under No. 3 are illustrated three views of a very highly specialized type specimen to show its construction. This specimen shows that its thickness is almost the same dimensions from an end view to that of the width from a side view. Usually the ultimate designs show a greater width than thickness.

The *Shuttle* patterns including these under-developed and these highly developed occur mainly within the Middle Mississippi Valley Area. These objects are made of miscellaneous materials, and those so far encountered were made of limonite, light colored quartzites, dark brown quartzite, finely grained light colored sandstone, dark red compact granite, black basalt, and ferruginous slate.

In the chapter *Adoption of Special Materials for Particular Types*, on page 187, is mentioned the fact that no particular stone was adopted for the making of the ultimate designs. Furthermore, this design was probably never very popular and was discontinued rather early, even though the design had become developed. Perhaps, this is the main reason why they are so rare. Therefore, one may believe that the *Shuttle* patterns were made prior to the time when certain selected materials were adopted for the making of certain other types of banner-stones. It is very apparent that many other patterns were made of certain adopted materials, but only after the designs, whatever they may have been, had become highly specialized.

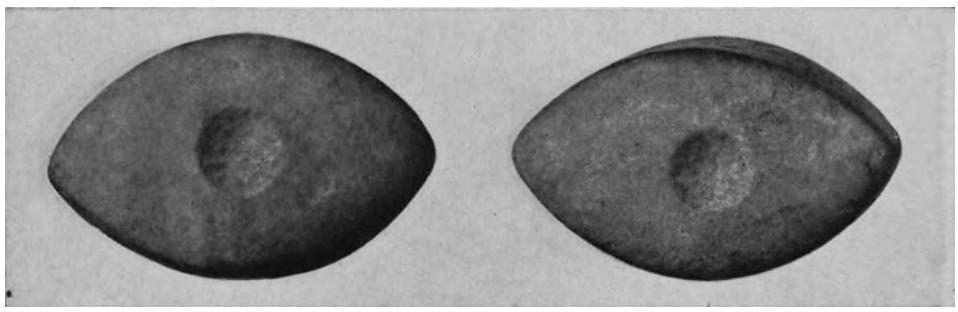


PLATE 161.

Fulton County, Kentucky. Material, quartzite, perforation absent. This unfinished Shuttle banner-stone was probably made from a pitted pebble. Note the indentations. Plate 2/3 actual size. FROM E. W. PAYNE COLLECTION, SPRINGFIELD, ILLINOIS

GENICULATE GROUP

TYPE No. 13

The *Geniculate* banner-stones are exceptionally interesting because they are so peculiarly designed. The most unusual feature about these patterns is the oval and oblong shaped perforations. The reason why these perforations were made in such shapes instead of round as those through other banner-stones still remains an unsolved mystery.

The perforations through many of the under-developed or early made *Geniculate* patterns are quite large. One might wonder if some of these objects which have large perforations were occasionally worn by the Indians on their hair ornamentally by inserting the braids through the perforations. Many of the perforations through the more highly developed patterns show a high polish, which indicates that they were probably placed on the ends of staffs, pipe-stems or other objects of wood. Regardless how these objects were used, it is very obvious that they were considered as ceremonial symbols by the Indians.

Formerly these peculiarly designed patterns were called "L-shaped" banner-stones. Many years ago Dr. Warren K. Moorehead discarded this term and adopted the terminology "Geniculate" for their classification. The Latin meaning of the word geniculate is: having knee like joints. This term is not exactly suitable for the design because it has a strange and inappropriate meaning. Nevertheless, the name *Geniculate* shall stand.

But little mention has been given to these oddly designed *bi-face* banner-stones in any publication. The main reason why they have not been more thoroughly described is that so little has been known about them. Previous writers have failed to describe the evolution of this group, and have neglected to discover the origin of the design.

Many years ago the writer developed a desire to discover the reason why these patterns were so peculiarly designed. This was indeed a very perplexing problem to solve. To become thoroughly familiar with the

diversity of shapes, particularly those which appeared to be under-developed, was very necessary. This knowledge would help one to discover the origin of this design. At this time the writer is convinced that the *Geniculate* patterns were developed only through evolution as all other ultimate designs of banner-stones have been created.

Prior to the publication of this volume there was included in the Geniculate classification two supposed variations. The one variation was that of the formerly designated "L-shaped" pattern, which is the true *Geniculate;* the other variation was that of the so-called "horn-shaped" patterns.

These two differently designed patterns have been divided into two distinct type groups for several reasons. The main reason is that the construction of each design is entirely different. After one observes the lines and planes of the true *Geniculate* patterns and then compares the design with that of the so-called horn-shaped patterns, it is discovered that no relationship can possibly exist between these two designs. This misclassification is probably due to the fact that these two supposed variations have oval or oblong shaped perforations. It has been discovered that each design had developed independently of each other through evolution. Furthermore, the origin of each design can be traced to two different primary forms.

It is very obvious that the so-called horn-shaped patterns are closely related to the *Curved Pick* patterns. The cross-sectional construction of both of these two designs is round. For this reason the horn-shaped objects which were previously regarded as being a *Geniculate* variation, and were misclassified in that group, have been placed in the *Curved Pick Group*. These objects should be regarded as *Single Pronged Pick* patterns. A more thorough description of these particular shaped banner-stones will be given later in a separate article accompanied with plates.

The origin of the *Geniculate* design can be traced to the *Southern Double-edged Primary Form, No. 3*. This statement may seem off hand to be a theory rather difficult to comprehend. This conclusion, however, was formed only after many years of research, and can easily be understood by comparing the lines and planes of this primary form with the lines and planes of the highly developed *Geniculate* patterns.

For many years the relationship of the variations was noted only by observing that the design of those which have short prongs correspond

to those which have the long prongs. The origin of the design was not even considered. But, after a great number of the early made *Geniculate* patterns were studied, it was discovered that the lines and planes correspond to the lines and planes of the *Southern Double-edged Primary Form*. Many of the short pronged patterns show two edged blades, similar to those of this primary form.

The writer has demonstrated his conception of the evolution of the *Geniculate Group* by showing six specimens in Plate 162 on page 347. By starting with a *Southern Double-edged Primary Form*, one can follow the evolution of the L-shape design to the ultimate patterns in a very convincing manner. These pictures show the development of the prongs.

The end view of five of these six specimens are also illustrated in this plate. These pictures also help to prove that the origin of this group can be traced to the *Southern Double-edged Primary Form.* After the L-shape design was created one of the edged blades was transformed into a narrow flattened plane. This fact can be noted by comparing the end view of the specimen No. 4 with that of No. 1. Furthermore, one can also note that after the L-shape design became more highly developed these flattened planes were made much wider. Occasionally these particular planes on highly developed specimens were made concave or fluted.

The writer also became convinced that the peculiar L-shaped design was created through breakage. When a piece of stone was broken away from one end of the perforation of a double-edged pattern by the inserted staff, the damaged area was sawed or ground away, thus forming a short prong. In this simple manner a new design was created.

The early made specimen illustrated in Plate 162 under No. 3, shows that a piece of stone was broken away at the lower end by the inserted staff. Similar breaks were instrumental in creation of the pronged designs.

The Indians undoubtedly adopted this new design, and from that time on, the prongs were an added feature and were made more and more pronounced. Many of the types have exceptionally lengthy prongs.

An exceptionally and highly specialized type specimen is shown in Plate 162 under No. 5. The lower end, the vertical plane to the right, and inner plane of the long extended prong are deeply concave or fluted. Only a small percentage of these objects encountered show fluting.

Previously mention had been made that if only a few of the *Geniculate*

(Continued on Page 354)

EXPLANATION OF PLATE 162

GENICULATE GROUP

This plate illustrates the evolution of the Geniculate Group. Starting with the Southern Doubled-edged Primary Form, No. 3 their development can be followed through the blending forms to the ultimate patterns, Type No. 13.

CLASS A, B AND C SPECIMENS

Plate 5/9 actual size

No. 1—ALABAMA, County unknown. Material, limonite. Surface polished. Size 3 1/8 x 2 1/8 inches. Primary form. Class A specimen.
Alabama Museum of Natural History collection, University, Alabama

No. 2—CLERMONT COUNTY, OHIO. Material, banded-slate. Note the oblong perforation. This specimen is a blending form for either the Geniculate or Paneled Groups. Size 3 3/4 x 2 inches. Class B specimen. *Dr. Rollin Bunch collection, Muncie, Indiana*

No. 3—JERSEY COUNTY, ILLINOIS. Material, fine grained gray sandstone, discolored from age. Oblong perforation. Note the broken out place at the bottom of the stone, caused apparently from the insertion of the staff. It is the author's conclusion that it is from such breaks that the Geniculate shapes originated. The Indians had salvaged specimens broken in this manner by cutting away the damaged part, leaving a short protruding prong, and thus developed a new design. Size 2 1/2 x 3 1/4 inches. Class C specimen. *Dr. P. F. Titterington collection, St. Louis, Missouri*

No. 4—WASHINGTON COUNTY, MISSOURI. Material, hard compact gray banded-slate. Oval perforation polished from the inserted staff. Found in 1924. Size 2 7/8 x 3 inches. Catalogue number 65. Class C specimen. *From the author's collection*

No. 5—PUTNAM COUNTY, OHIO. Material, green banded-slate. Found near the town of Ottsville. Size 2 5/8 x 5 inches. Catalogue number 63. Class C specimen.
From the author's collection

No. 6—EDGAR COUNTY, ILLINOIS. Material, white and black, speckled granite, surface polished, hollow-reed drilling just started. This is the only Geniculate type made of this material the writer has observed. Size 3 x 4 inches. Catalogue number 567. Class C specimen. *From the author's collection*

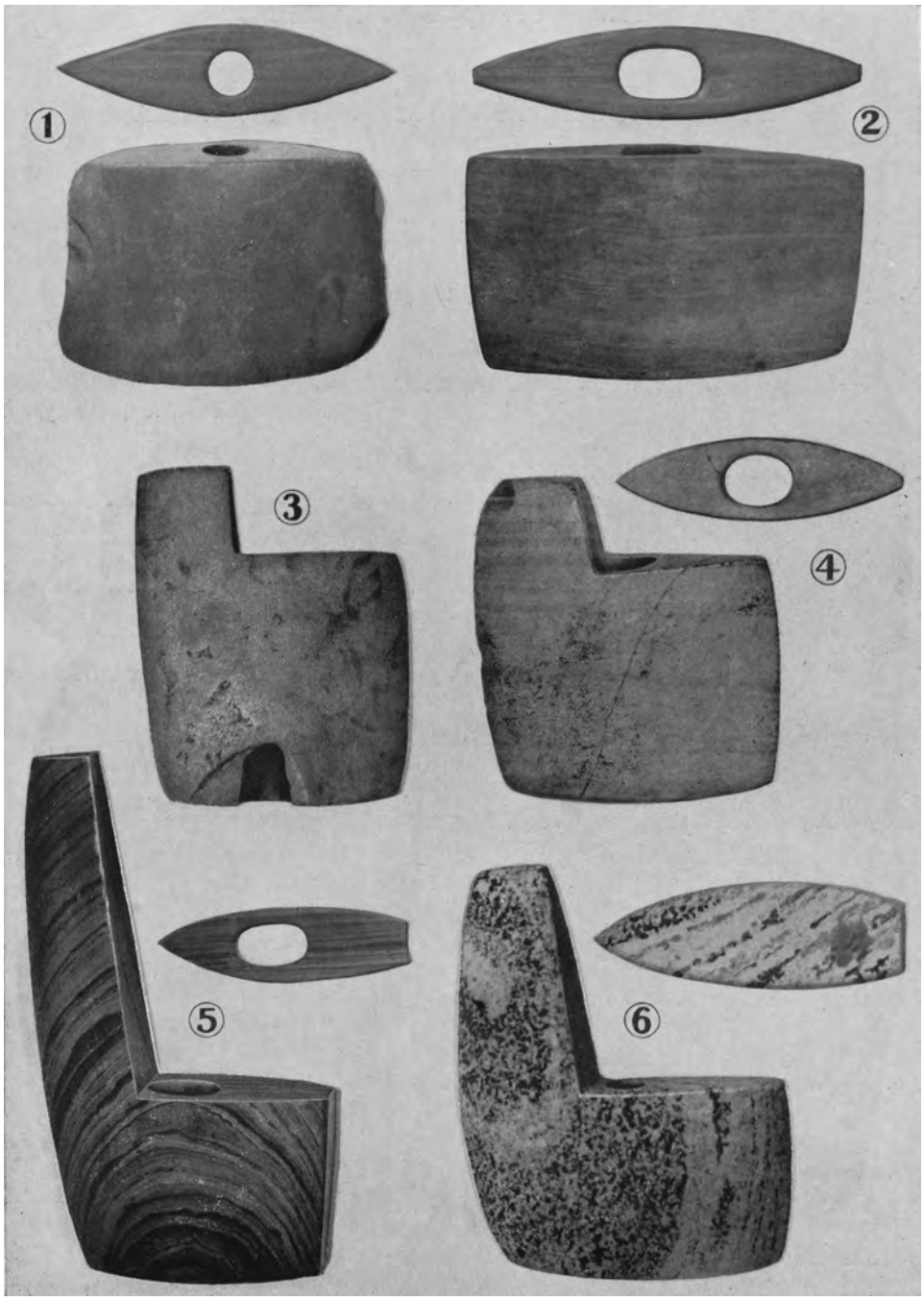


PLATE 162

EXPLANATION OF PLATE 163

GENICULATE GROUP

Types No. 13 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 10/21 actual size

No. 1—Ohio, County unknown. Size 2 x 1 3/4 inches.
N. E. Carter collection, Elkhorn, Wisconsin

No. 2—Warren County, Ohio. Size 2 1/4 x 1 1/2 inches.
B. W. Stephens collection, Quincy, Ill.

No. 3—Floyd County, Indiana. Size 2 1/4 x 2 3/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No 4—Eaton County, Michigan. Size 2 3/8 x 3 3/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—Kent County, Michigan. Size 2 3/4 x 3 3/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—Chenango County, New York. Size 3 3/4 x 2 3/4 inches.
G. I. Groves collection, Chicago, Illinois

No. 7—Chenango County, New York. Size 4 1/4 x 2 3/4 inches.
G. I. Groves collection, Chicago, Illinois

No. 8—Hamilton County, Ohio. Size 3 x 4 1/4 inches.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 9—Darke County, Ohio. Size 2 3/4 x 4 1/4 inches.
Dr. Rollan H. Bunch collection, Muncie, Indiana

No. 10—Wyandot County, Ohio. Size 2 1/8 x 3 inches.
L. C. Snyder collection, Lacona, New York

No. 11—Chenango County, New York. Size 2 1/4 x 3 1/4 inches.
G. I. Groves collection, Chicago, Illinois

No. 12—Erie County, New York. Size 2 3/8 x 2 3/4 inches.
Dr. A. W. Pendergast collection, Fairbury, Illinois

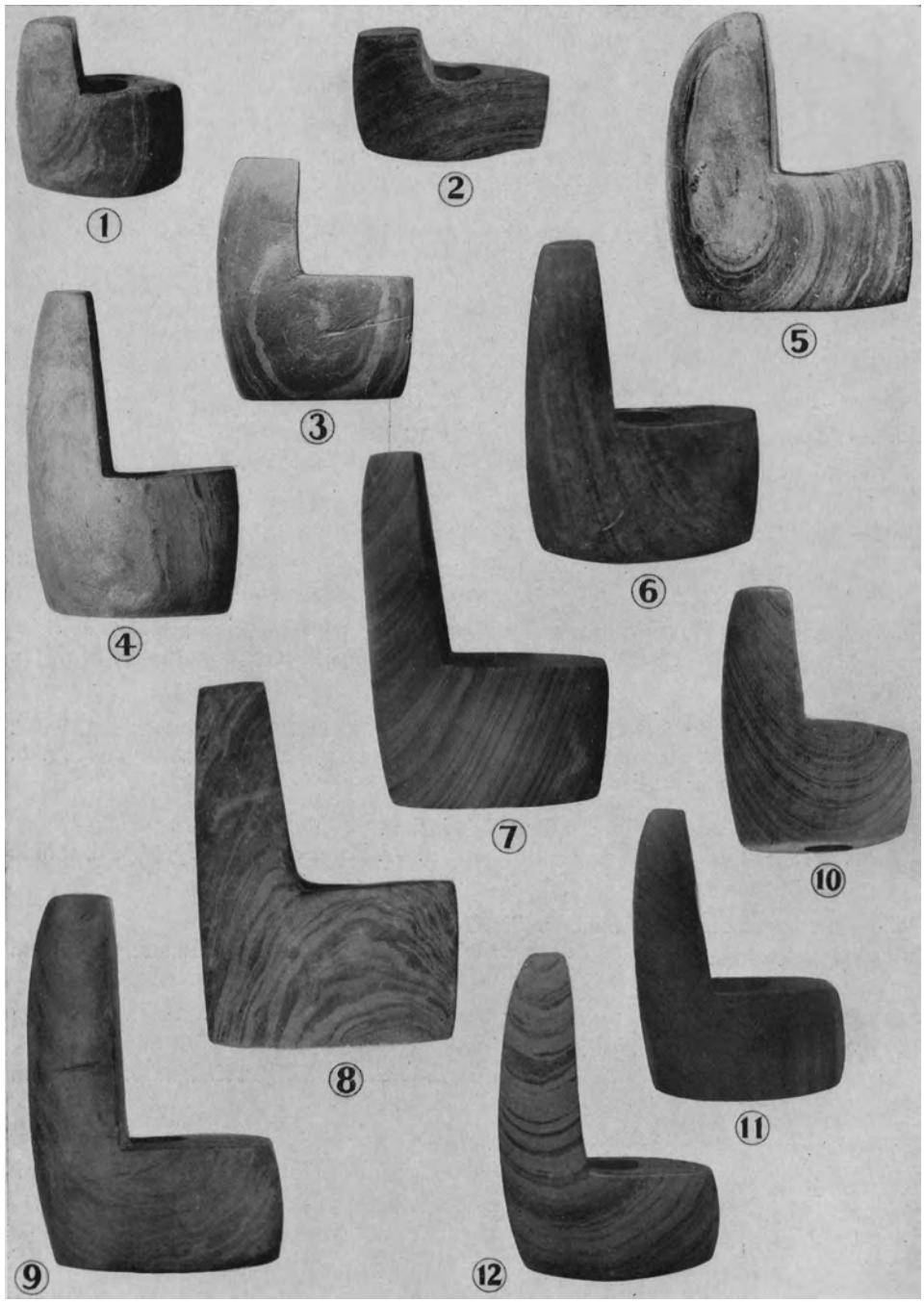


PLATE 163

EXPLANATION OF PLATE 164

GENICULATE GROUP

Types No. 13 of Banded-slate Material from the Heart Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—ALLEGAN COUNTY, MICHIGAN. Size 2 x 3 1/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—KENT COUNTY, MICHIGAN. Size 2 1/2 x 3 1/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—KALAMAZOO COUNTY, MICHIGAN. Size 2 1/4 x 2 3/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—FOUNTAIN COUNTY, INDIANA. Size 1 5/8 x 2 1/4 inches. Negative number 5/3697.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 5—Locality unknown. Size 2 1/8 x 3 3/4 inches.
E. W. Payne collection, Springfield, Illinois

No. 6—JACKSON COUNTY, MICHIGAN. Size 2 3/8 x 3 3/4 inches.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 7—DELAWARE COUNTY, INDIANA. Length 5 1/2 inches. This specimen is blocked into shape and shows no evidence of drilling.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—EATON COUNTY, MICHIGAN. Size 2 3/4 x 3 7/8 inches. No evidence of drilling.
Donald O Boudeman collection, Kalamazoo, Michigan

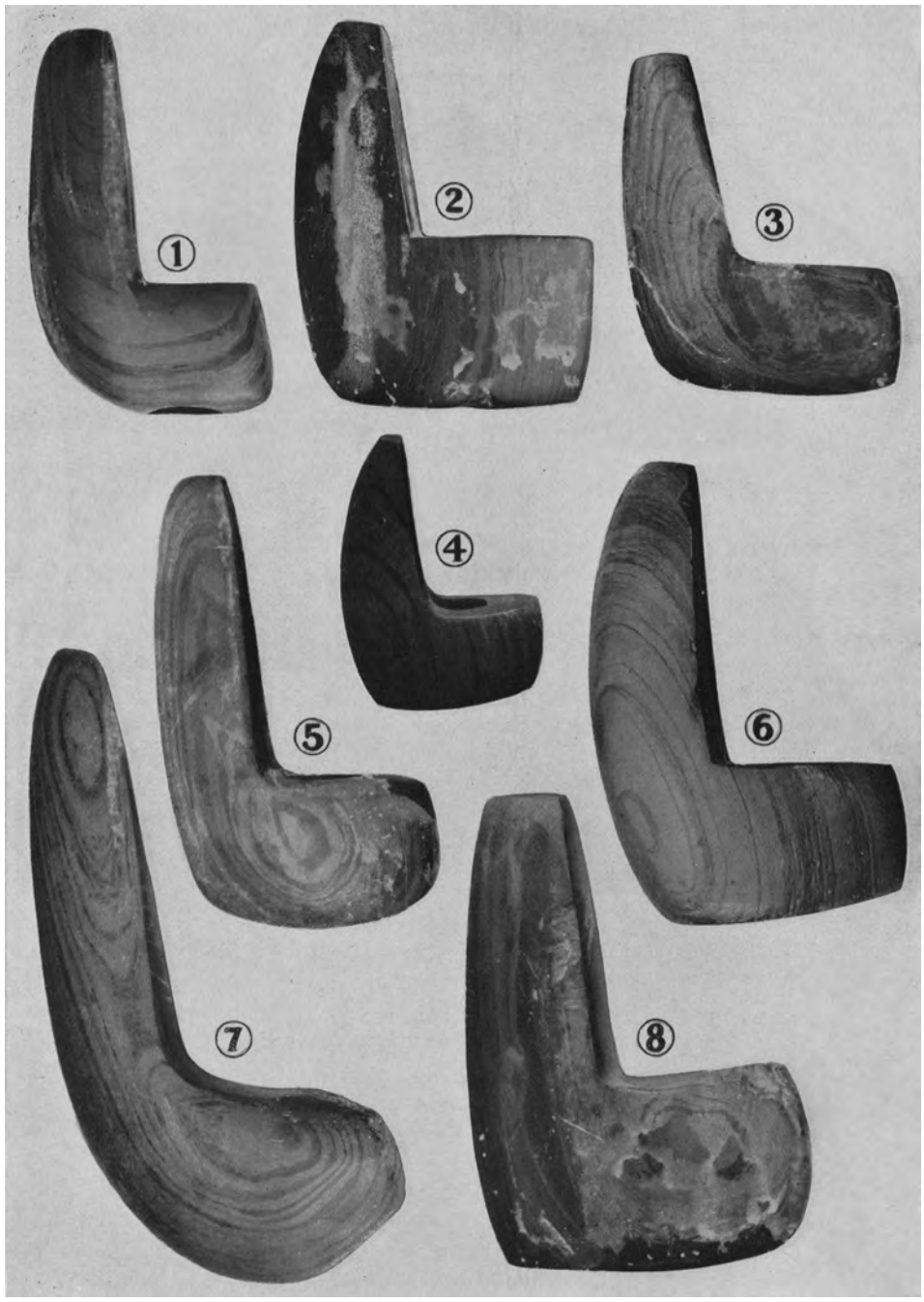


PLATE 164

EXPLANATION OF PLATE 165

GENICULATE GROUP

Types No. 13 of Banded-slate Material from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—OHIO, County unknown. Negative number 5/3703.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 2—Locality unknown. Probably found in Indiana.
E. W. Payne collection, Springfield, Illinois

No. 3—ALLEN COUNTY, INDIANA. *C. W. Fair collection, Davenport, Iowa*

No. 4—PICKAWAY COUNTY, OHIO.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 5—Locality unknown. (Probably Indiana).
From the late Leslie Hill collection, Ft. Wayne, Indiana

No. 6—GRAYSON COUNTY, KENTUCKY. Found near Iberia. Size 4 1/2 x 2 inches, 7/8 inch thick. Negative number 24581-D and 249639. Case 18. Oscar Constant.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 7—BROWN COUNTY, OHIO. Catalogue number 3/5302.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 8—LAKE COUNTY, OHIO.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 9—HANCOCK COUNTY, ILLINOIS. Negative number 3/5374.
Museum of the American Indian Heye Foundation collection, New York, N. Y.

No. 10—MONTGOMERY COUNTY, OHIO. Catalogue number 251.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 11—Locality unknown. Size 2 3/4 x 2 1/2 inches. Negative number 24581-G and 42926.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 12—Locality unknown. Probably found in Ohio.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

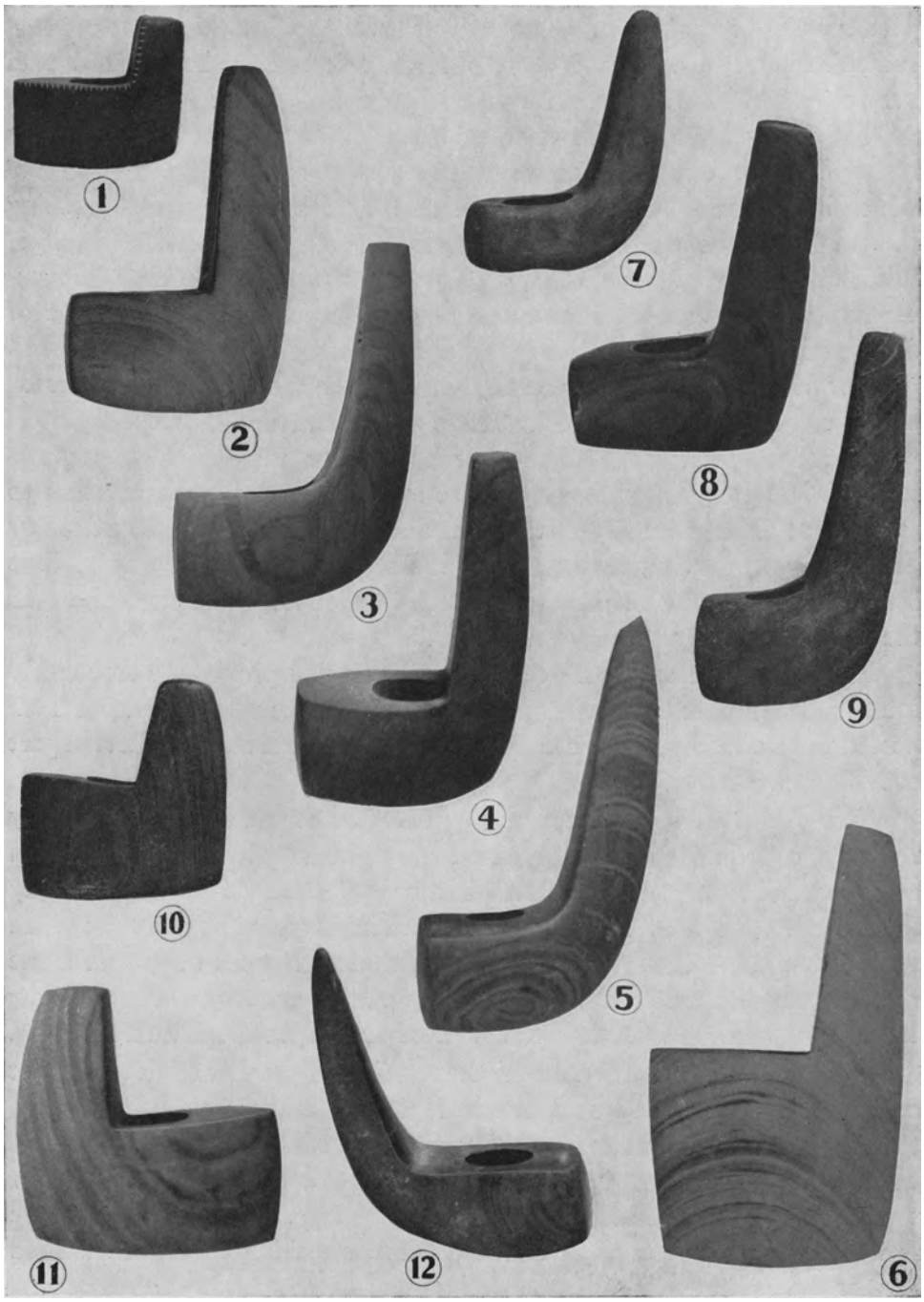


PLATE 165

patterns were found, one might believe that they were the result of some Indian's fancy. But, since so many of these objects have been found, it is very obvious that they comprise a well established group.

It has also been mentioned that the *Geniculate* patterns are closely related to the *Crescent* banner-stones, and also to the thick gorgets which have a horn-like protuberance. If this idea was regarded as being the origin or evolution of the design of the *Geniculate* patterns, it is ridiculously wrong. All other designs of banner-stones with the exception of the *Geniculate*, and the *Single Pronged Pick* patterns are of conventional balance. The wings of all other banner-stones which extend from both sides of the perforation, whether short or long, *single-face* or *bi-face* construction correspond. These are bipennate designs.

The reason why the *Geniculate* and *Single Pronged Pick* patterns were designed off balance may seem to many to be a difficult problem to solve. But after one analyzes the lines and planes of these two curiously designed patterns and studies their evolution noting their origin, it is discovered that these two designs were developed from bipennate patterns that were originally of conventional balance.

The blending forms with the short protruding prongs are frequently found in the Lower Ohio Valley Area, including the western half of Tennessee and Kentucky, the southern part of Illinois, and also the eastern part of Missouri.

The type specimens occur throughout the Heart Area and usually are made of banded-slate. Only one highly developed specimen has been observed made of a material other than banded-slate. This exceptionally rare object is made of black and white speckled granite and is shown in Plate 162 under No. 6. There is only one theory that can be given for the reason why this pattern was made of granite material. Possibly the Indian had believed that this stone carried some special spiritual meaning.

It is highly probable that, if the making of banner-stones had not ceased so soon, speckled or spotted granite materials would have eventually been adopted for the making of the ultimate designs to add to their ceremonial significance. By referring back to many of the other type groups, one can note that beautiful materials such as spotted granite and ferruginous quartz were adopted for the making of certain shaped banner-stones, but only after the designs had become highly developed.

PANELED GROUP

TYPE No. 14

This group of banner-stones is comprised of many variations. Because these variations appear to be so differently designed when compared to one another, one may have considerable difficulty in following the evolution of this group. But after one studies the construction of the many variations, it is discovered that their lines and planes are arranged very similarly to each other. Therefore, these variations are closely related.

But little is known about these peculiarly designed *bi-face* patterns and but little mention has been given to them. It is very apparent that previous writers had made no attempt to classify these objects which show so many variations into an independent type group. Neither has the evolution of this group or the origin of the highly developed designs been described. Many of the specimens shown in the accompanying plates are patterns that have never been illustrated before.

The writer has taken the liberty to place all of these variations into a one type group and has adopted the term *Paneled* for this group's classification. This name was selected because it is very appropriate for describing the construction of some of the highly developed designs.

The origin of this group can be traced to the *Southern Double-edged Primary Form No. 3*. The greater part of the development of this group, however, occurred within the Heart Area, and there a great number of blending forms and type specimens occur.

These objects are usually made of no other material than banded-slate. This material was used very extensively for the making of the majority of other differently designed patterns found within this area.

A very unusual feature about these banner-stones is the oval or oblong shaped perforations. It is very possible that these objects were used in the same manner as the *Geniculate* and *Single Pronged Pick* patterns which also have oval or oblong shaped perforations.

(*Continued on Page 362*)

EXPLANATION OF PLATE 166

PANELED GROUP

Blending Forms of Banded-slate from the Heart Area

CLASS B SPECIMENS

Plate 5/9 actual size

No. 1—BUTLER COUNTY, OHIO. Oval perforation. Neg. No. 29277-24581-D11. Size 2 x 1 1/2 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—ALLEGAN COUNTY, MICHIGAN. Note the three tally notches on one edge, and the six on the other edge. Perforation oblong in shape.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 3—ADAMS COUNTY, ILLINOIS. Note the broken out portion caused apparently by the inserted staff. *B. W. Stephens collection, Quincy, Illinois*

No. 4—ALLEGAN COUNTY, MICHIGAN. Oval perforation.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 5—HENRY COUNTY, INDIANA. Note the well formed, large oblong perforation, and the fluted edges, and the fluted blades of the wings. Both faces of this specimen are deeply concave. *Dr. Rollin H. Bunch collection, Muncie, Indiana*

No. 6—MONTGOMERY COUNTY, OHIO. Oval perforation.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 7—MONTGOMERY COUNTY, OHIO. Oblong perforation.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 8—PREBLE COUNTY, OHIO. This specimen appears to be a double Geniculate pattern, but it is nothing more than a Paneled form that was broken by the inserted staff, similar to the specimen No. 3. It is very evident the damaged portion was cut away, thus, this design.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 9—CRAWFORD COUNTY, MICHIGAN. Found near Cadalac. Bleached tan from age. Large oval perforation. *Con Foster Museum collection, Traverse City, Michigan*

No. 10—BUTLER COUNTY, OHIO. Catalogue No. 200865. Neg. No. 24581-D. Case 18.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 11—MONTGOMERY COUNTY, OHIO. Oval perforation.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 12—MONTGOMERY COUNTY, OHIO. Oval perforation.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 13—MONTGOMERY COUNTY, OHIO. Oblong perforation.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

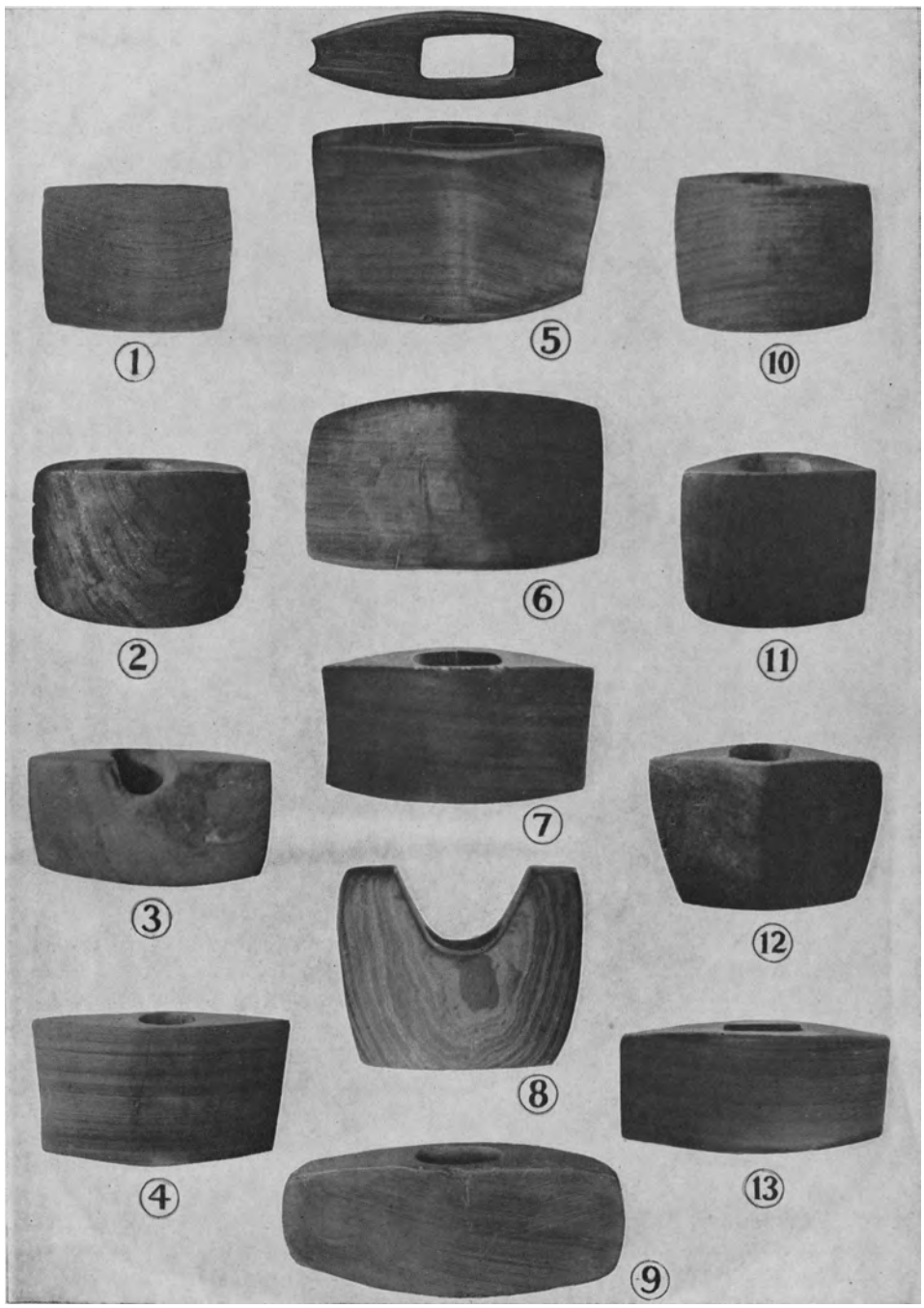


PLATE 166

EXPLANATION OF PLATE 167

PANELED GROUP

Blending Forms and Types No. 14 of Various Slate Materials from the Heart Area

CLASS B AND C SPECIMENS

Plate 10/19 actual size

No. 1—DARKE COUNTY, OHIO. Material, green banded-slate. Found in 1883. Class C specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 2—MORROW COUNTY, OHIO. Material, green banded-slate. No evidence of drilling. Size 3 1/2 x 2 7/8 inches. *B. W. Stephens collection, Quincy, Illinois*

No. 3—JAY COUNTY, INDIANA. Material, green banded-slate. Large oval perforation. The sides of this specimen are not paneled. Blending form Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 4—WAYNE COUNTY, INDIANA. Material, blue banded-slate. Both sides of this specimen are deeply concave. Large oval perforation. Class C specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 5—ALLEGAN COUNTY, MICHIGAN. Material, green banded-slate. Both sides of this specimen are deeply concave, and paneled. Large oval perforation. Class C specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 6—SHELBY COUNTY, INDIANA. Material, dark green banded-slate. Both sides are deeply concave, large oval perforation. Class C specimen. *Dr. Rolland H. Bunch collection, Muncie, Indiana*

No. 7—DELAWARE COUNTY, INDIANA. Material, hard red jasper. Oval perforation. Six tally notches are carefully cut on each face of the stone, and also on the edge of each wing. Because this specimen is not paneled it is a blending form. Size 2 1/2 x 1 3/4 inches. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 8—DECATUR COUNTY, INDIANA. Material, light bluish gray finely grained sand stone. Found near Greensburg. Large oval perforation 2/3 way through the stone. Both sides are deeply paneled. Class C specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—COLE COUNTY, MISSOURI. Material, green banded-slate. Large oval perforation. Both sides of this specimen are deeply paneled, and is the finest type specimen of its kind so far observed. Formerly in the author's collection. Class C specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

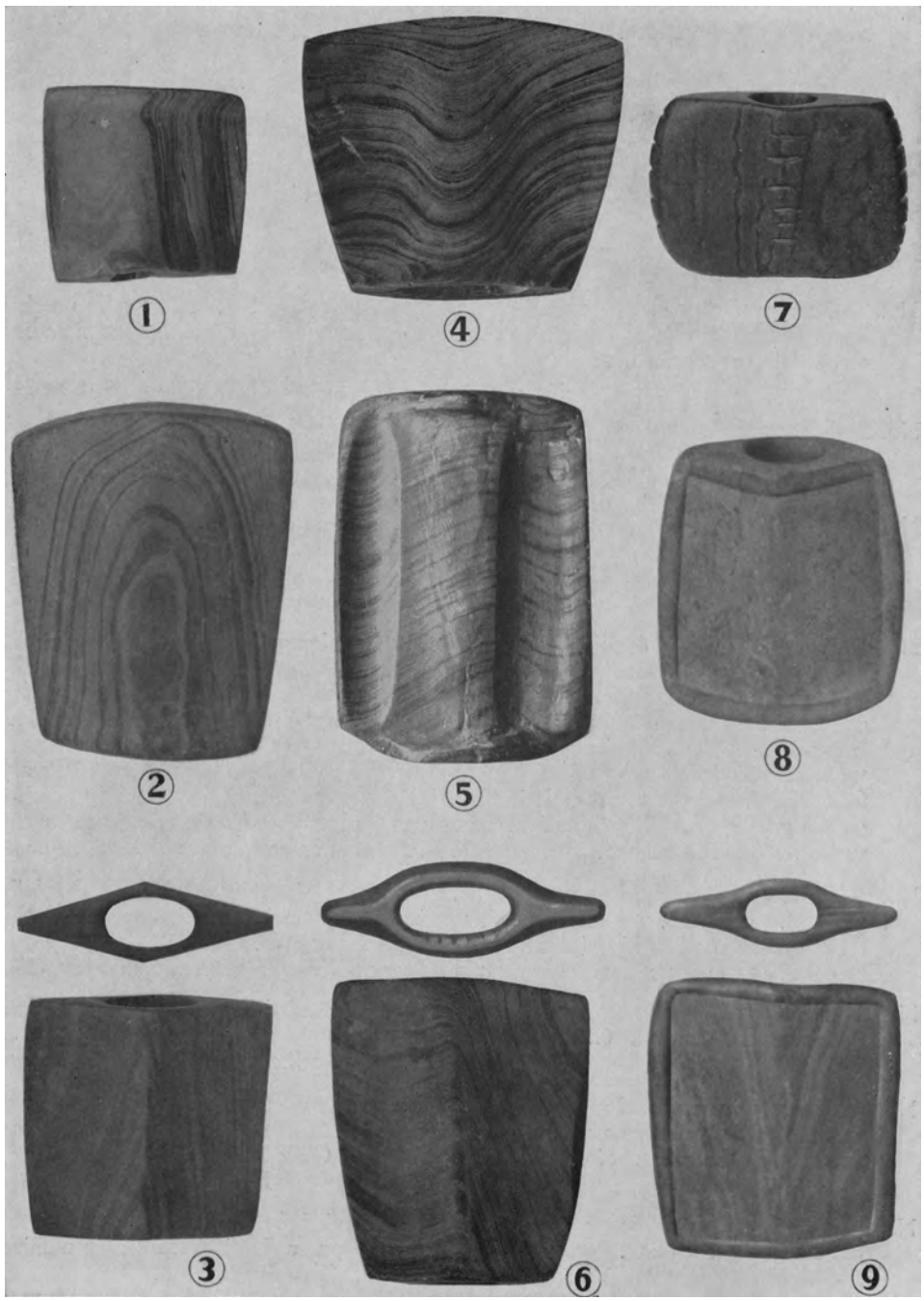


PLATE 167

EXPLANATION OF PLATE 168

PANELED GROUP

Blending Forms and Types No. 14 of Banded-slate from the Heart Area

CLASS B AND C SPECIMENS

Plate 2/3 actual size

No. 1—Berrien County, Michigan. Found near Benton Harbor. Eight tally notches on one edge and six tally notches on other edge. Oval shaped perforation. Blending form. Class B specimen.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 2—Montgomery County, Ohio. Oval shaped perforation. Both sides of this specimen are paneled. Class C specimen.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 3—Darke County, Ohio. Material, green banded-slate. Found near the town of Greenville in 1882. Both sides of this specimen are deeply paneled. Formerly in the E. W. Payne collection. Catalogue number 5489. Class C specimen.
B. W. Stephens collection, Quincy, Illinois

No. 4—Palaski County, Illinois. Material, light blue banded-slate. Found two miles northwest of Grand Chain near the Ohio River in a field by a colored boy in 1923. This specimen is exceptionally unusual because of the fact it has two perforations, one of which is round and passes through the edge of the stone, the other is oval. The three views of this specimen clearly shows its construction. The author believes that this Paneled blending form was made from an oval Heart Area Ovate Primary form No. 7, and the round hole is the original perforation. Note the tally notches on the two edges. This unique specimen is the only one of its kind observed by the author. Class B specimen. *T. R. Reichert collection, Grand Chain, Illinois*

No. 5—Sandusky County, Ohio. Material, blue banded-slate. The edges are carefully serrated. The large perforation is shown in the illustration. This is probably the finest specimen of its kind in existence. Class C specimen.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 6—De Kalb County, Indiana. Material, green banded-slate. Oval perforation. Both sides are paneled. Class C specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 7—County unknown. Probably Indiana. Material, green banded-slate. Large oval perforation. The edges are carefully serrated with fifteen notches on one edge and fourteen on the other. Size 2 3/4 x 1 3/4 inches. Class B specimen.
From the author's collection

No. 8—Clinton County, Indiana. Material, blue banded-slate. Found near Frankfort. No evidence of drilling. Formerly in the E. W. Payne collection. Catalogue number 5460. Size 3 3/4 x 2 1/2 inches. Blending form. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

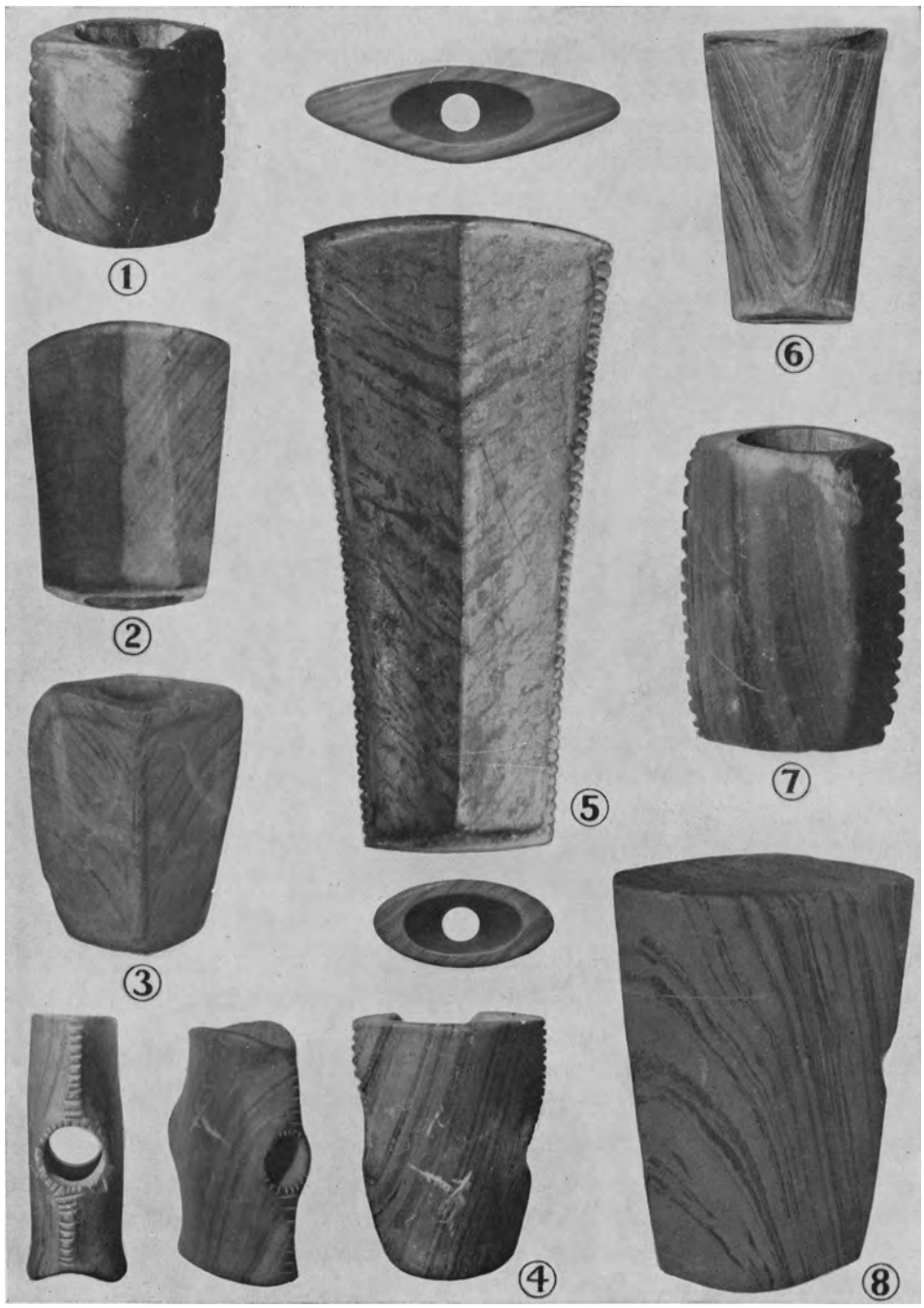


PLATE 168

In the article on the *Geniculate Group*, the writer mentioned a number of theories why these perforations were made oval or oblong in shape instead of round as those through other banner-stones. Therefore, there is no need to mention these theories again.

The most unusual feature about the more highly developed specimens is the depressions made upon the two planes of the faces. These depressions vary greatly. Some were made quite shallow while others were made rather deep. Finally these depressions were arranged in conventional design which required considerable work.

Many years ago, for the first time, the writer came in contact with an exceptionally highly developed *Paneled* specimen. This object is shown in Plate 167 under No. 9. Both of the faces show a rather large depressed rectangular area, thus forming a raised rounded rim which extends completely around the outer edge of the stone. This raised rim is somewhat similar in shape to that of a frame. Another carefully paneled type specimen is shown in this same plate under No. 8.

Another very interesting pattern is shown in Plate 168 under No. 5. This object is not only paneled but it shows that the two side edges were carefully serrated. The two end views shown in this plate are oval in shape. Each face is composed of two flat planes that form a ridge, and the cross-sectional construction is an elongated diamond shape. This construction was made possible by the arrangement of depressions or paneling. This specimen is but another highly developed variation. A number of other similarly shaped objects are also shown in this same plate. These are listed under the Nos. 2, 3, 6 and 8.

Probably the most novel *Paneled* specimen so far discovered is shown in Plate 168 under No. 4. Three views of this object are illustrated to show its construction. This extremely rare banner-stone has two perforations, one of which is round and passes through the edge of the stone, the other is large and oval in shape and passes through the ends.

The writer believes that this specimen was made from an oval shaped banner-stone and the round hole through the edge is the original perforation. The original banner-stone from which it was probably made was a *Heart Area Ovate Primary Form, No. 7*. This object of strange construction is the only one of its kind so far observed. Note that the edges on each side of the round perforation are carefully serrated.

NOTCHED OVATE GROUP

It has been discovered that highly developed double-notched *Ovate* shaped banner-stones occur in two widely separated areas. The ultimate designs from these two separated areas appear to be somewhat varied in construction. But after the designs of the two variations are studied, one can note that their lines and planes are very similar. The one variation is the *Notched Ovate, Type No. 15*, which occur in the Lower Alleghany Area; the other variation is the *Notched Ovate, Type No. 27*, which occur in the Heart Area.

After the evolution of these two ultimate designs was carefully studied, it was discovered that each variation had developed independently of each other from two different simply shaped patterns. The highly specialized specimens from the Lower Alleghany Area were developed from the *Southern Ovate Primary Form No. 4*, and the highly specialized specimens from the Heart Area were developed from the *Heart Area Ovate Primary Form No. 7*.

The third ultimate pattern which has been placed in this group is the *Double Crescent, Type No. 28*. The reason for this classification is the fact this design developed from the *Notched Ovate, Type No. 27*. By referring to the chart on page 156, one can note the system by which this design is classified.

The full page plates assembled in the latter half of this volume show hundreds of classified banner-stones which are arranged according to the *Table of the Twenty-four Groups*, shown on page 126. For this reason the plates which show the different type specimens cannot be arranged numerically according to their type number. The evolutionary development of the design of each type classified in this group, is described separately by three articles.

Following the articles are shown the series of plates that illustrate a large number of the blending forms, and also many type specimens of this group. The articles are given as follows:

NOTCHED OVATE (Lower Alleghaney)

TYPE No. 15

Probably the most interesting feature about the ultimate *Notched Ovate* patterns from the Lower Alleghany Area is the fact that they occur within a large part of the Primary Area and also in some of the surrounding country. Therefore, this fact indicates that the development of the ultimate designs had taken place within the section of the country in which the *Southern Primary Form No. 4* was created. Furthermore, this is the only highly developed design found within the Primary Area.

Only a small number of specimens are shown in the accompanying plates. The paucity of these objects is due to the fact that these patterns are restricted to a very small area, and for this reason they are very rare It has been a difficult task to locate specimens from which photographs could be made. There are, however, a sufficient number shown in the two accompanying plates to permit one to study the evolution of the design and to note the materials from which they are made.

Usually these patterns are made of finely speckled and spotted granite materials. Yet, occasionally, specimens are noted having been made of other varieties of rock. Nevertheless, the granite materials predominate.

Plate 171 shows two unnotched blending forms which were undoubtedly made prior to the time when the notches were added to the objects to make the design more beautiful. In this same plate are also shown three unfinished double-notched patterns which are very interesting.

Plate 172 shows a number of type specimens. Note that No. 1 is exceptionally beautiful and shows remarkable workmanship. This object is the most highly developed type specimen so far observed.

One will note that the two notches made in the ultimate *Notched Ovate* patterns from the Lower Alleghany Area are usually of uniform width. This feature of construction is not so true of those from the *Heart Area*. The variations from that area show that the notches were first made of uniform width and then later were made into expanding notches which in the course of time were designed larger and larger.

Specimen No. 6 in Plate 172 is exceptionally interesting because it has only one expanded notch, and also because it is made of beautiful translucent ferruginous quartz material. The writer has placed this very

unusual pattern into this classification because its lines and planes permit one to do so even though this object was found far from the area in which the *Notched Ovate* (*Lower Alleghany*) type specimens occur. There may arise the question whether or not this object can be so classified. It is, however, very probable that this particular specimen was carried from the Primary Area to the state of Arkansas, or it may have been made in this state by an Indian who had traveled from the Primary Area. There is no reason why it should be classified as a *Freak*.

NOTCHED OVATE (HEART AREA)
TYPE No. 27

The beautifully designed *Notched Ovate* banner-stones from the Heart Area developed within this area from the *Heart Area Ovate Primary Form No. 7*. This is the only primary form that is not classified to the Primary Area. These simply designed patterns occur quite abundantly within the Heart Area. Usually they are oval in shape, and their construction is somewhat similar to that of a bean.

The blending forms of this group show a higher degree of development in construction. The primary forms were transformed into a more beautifully designed pattern by having rather thin wings. Usually these objects are considerably larger than the primary forms, and the perforations are drilled through the largest dimensions.

The ultimate designs are those which have a well made notch at each end. The writer believes that the origin of the *Notched Ovate* design from this area developed through breakage. Considerable speculation already has been given concerning the development of ultimate designs of a number of banner-stones in the sub-chapter, *Development of Ultimate Designs of Banner-stones Through Breakage*. It has been pointed out in this article the simple manner in which the design of the *Notched Butterfly* and the *Notched Ovate* patterns of banded-slate were created.

Plate 174 illustrates in a very convincing manner the evolutionary development of the notches in these patterns. Note that No. 1 has a very small angular shaped notch, while the other specimens Nos. 2, 3 and 4 show that the notches were made larger and more expanding in shape.

A number of extremely highly developed type specimens are shown in Plate 177. Number 4 is of an abnormal size, very beautifully designed,

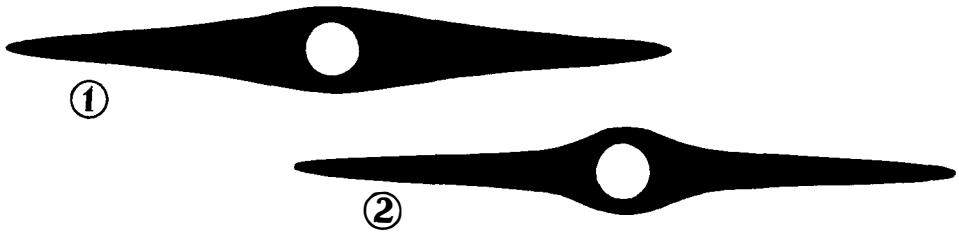


PLATE 169.

Cross-sectional drawing showing the variation in construction of the bi-face Notched Ovate (Heart Area) type specimens.

No. 1—The two face planes of this variation are slightly convex in shape.

No. 2—This variation has a rounded reinforced area through the middle of each face for the perforation.

and shows remarkable workmanship. The expanding notches in this specimen are exceptionally large and add greatly to the beauty of this design.

The two single-notched patterns Nos. 8 and 9 are also very interesting. Some may believe offhand that these two specimens are unique or freak shaped banner-stones, but the writer is convinced that they are nothing more than single notched *Ovate* variations. If, however, a rather large number of objects of this design were found, one could regard them as an independent variation belonging to this classification.

For many years the *Notched Ovate* banner-stones from the Heart Area have been frequently referred to as *Double Crescent* patterns. This erroneous classification has always been very amusing to me. There is no doubting that the collectors who are familiar with the banner-stones which the writer regards as *Notched Ovate* patterns and those which are regarded as *Double Crescent* patterns have observed a close relationship. Nevertheless, there is no reason why the two different designs should be called *Double Crescents*.

After the evolution of the *Notched Ovate* patterns is carefully studied, one will note that those regarded as ultimate designs were independently developed, and were undoubtedly made prior to the time when the *Double Crescent* patterns were made. For this reason they can be classified as an independent type. Furthermore, the design of the *Notched Ovate* type specimens are too highly developed to be regarded as mere blending forms, even though they had played such a part in the evolution of the *Double Crescent* design.

DOUBLE CRESCENT

TYPE No. 28

It is very obvious that the ultimate *Double Crescent* patterns were developed from the ultimate *Notched Ovate* patterns. A very interesting specimen is shown in Plate 178 under No. 6. Note that a very small notch was made in the middle of the edged blade of each wing. These two small notches are undoubtedly the origin of the beautifully designed *Double Crescent, Type No. 28*, which later were created. The two specimens shown under Nos. 1 and 2 in Plate 179 also help to prove this theory. By comparing these two designs with those highly specialized, one will note that the construction is the same.

It is very apparent that the small notches in the edged blades of the early made patterns were made larger and larger until the design was transformed into the beautiful ultimate designs. After one observes this evolutionary development it is very obvious that these patterns were made in the latter phase of the Banner-stone Era. For this reason the specimens which the writer has classified as *Notched Ovate* banner-stones should not be regarded as *Double Crescent* patterns. By referring to the chart shown on page 156, the system under which these two designs are classified can be observed.

The design of the faces of these objects has in construction two distinct variations. The one variation includes those having a rounded reinforced area upon the two faces; the other variation consists of those which have a raised sharp ridge on both faces running parallel to the perforation. The ridged variations are rarer than those which are of plain construction. The accompanying plates show quite a large number of each variation.

Although these patterns are usually of *bi-face* construction, there are occasionally encountered *single-face* patterns. An excellent example is shown in Plate 183 under No. 3. Note also that the end view shows many tally notches along the edge. There is a possibility that the raised ridge upon the one face of this object became damaged and was ground down to obliterate the damage, thus bringing about this variation in construction. Because of the present construction, this specimen belongs to the *single-face* classification, regardless of the fact that these patterns usually belong to the *bi-face* group.

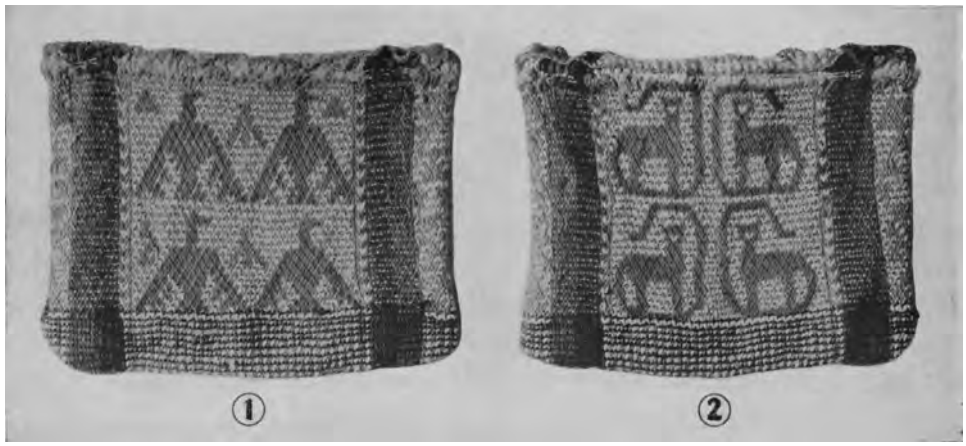


PLATE 170.

Medicine bag from the Mesquakie Reservation, Tama, Iowa, made by the Sauk and Fox or commonly called Mesquakie Tribe. This bag was owned by the daughter of Chief Keokuk, who was ninety-four years old at the time of its purchase.

No. 1—Four Thunder-bird symbols are woven on this side displayed.

No. 2—Four Under-water Monsters are woven on this side displayed.

FROM THE AUTHOR'S COLLECTION

The beautiful design of many of the delicately made *Double Crescent* specimens show a higher degree of development than all other designs of banner-stones. The ultimate patterns were created only by gradual changes over a period of many years, probably centuries. Whether or not this design actually represents some animated creature is difficult to say.

Many of the older members of mid-west tribes still believe in the old legends, customs, and mythical creatures which are symbolized upon many of the old medicine bags, pottery, blankets, and other objects by four in number. It was and possibly still is the custom of the mid-west and plains tribes to blow smoke to the four winds. Usually the various ceremonial bundles of these tribes consist of four in number.

Plate 170 illustrates an old ceremonial medicine bag which was made in the state of Iowa by a mid-west tribe (Saux and Fox). Note that one side portrays the Thunder-bird and the other side portrays the Under-water Monster. Note also that each of these two symbols is represented four times, which number was considered very important in the general ceremonial makeup of this object and many other articles.

The plains Indian symbol of the star is designed with four points. It is not uncommon to note small deeply cupped discoidal stones from Tennessee and Kentucky which have a cross incised upon one of the concave depressions. Each of these incised lines is usually of the same length. Probably this symbol also represented the four-pointed star during the time when these objects were made. Therefore, one may believe that this symbol was created hundreds of years ago.

It is, however, difficult to determine whether or not it was the custom during the Banner-stone Era to portray certain symbols upon certain objects by four in number. One may believe that if certain symbols such as that of the Thunder-bird are portrayed four times upon the medicine bags by the historic Indians for the main purpose to signify a ceremonial meaning, it is possible that this custom was also practiced during the Banner-stone Era.

Legends and symbols of mythical creatures can at this time be traced back to the Banner-stone Era. Discoidal stones, ear spools, pipes, shell gorgets and other objects which were undoubtedly made during the time when banner-stones were used, were occasionally decorated with the symbol of the Thunder-bird. Flint effigies of this mythical creature occur quite abundantly throughout the Middle Mississippi Valley Area. Yet this symbol is commonly used today by many tribes.

After considering these customs one can advance a theory why the *Double Crescent* banner-stones were designed with four prongs. Probably the four prongs had likewise symbolized at this seemingly early time some ceremonial meaning similar to those associated with the symbols which are occasionally repeated four times on certain objects by many of the Indian tribes to-day. It is also very possible that the four prongs of the *Double Crescent* patterns were so made to represent some mythical creature. But what this creature was, or what the meaning of the four prongs was, will probably never be known. Furthermore, we must not overlook the fact that all the ultimate designs of these objects were made in the latter phase of the Banner-stone Era. At this particular time, many of the legends and symbols which are known to-day were in existence, probably even including the custom of portraying the symbols by four in number. See: ornamented banner-stone No. 8 in Plate 123, page 261.

EXPLANATION OF PLATE 171

NOTCHED OVATE GROUP

Notched Ovate Blending Forms and Types No. 15 of Various Granite and Quartz Materials from the Primary and Lower Alleghany Areas

CLASS B AND C SPECIMENS

Plate 5/11 actual size

No. 1—VOLUSIA COUNTY, FLORIDA. Cast. Material, of original diorite. Found near Tomoka Creek. A. E. Douglas, Case 18. Neg. Nos. 29273-61058. Size 5 x 4 1/4 inches. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—GORDON COUNTY, GEORGIA. Material, finely speckled granite, no evidence of drilling. Catalogue number 5204. Neg. No. 786. Unfinished. Class C specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 3—GEORGIA, County unknown. Material, finely speckled granite. Catalogue number A7486. Size 5 5/8 x 5 3/8 inches. Unfinished. Class C specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 4—TOWNS COUNTY, GEORGIA. Material, green quartz, surface polished, no evidence of drilling. This specimen was supposed to have been found in a mound. Size 4 7/8 x 4 3/4 inches. Catalogue number 53. Unfinished. Class C specimen.
From the author's collection

No. 5—GEORGIA, County unknown. Material, diorite, incompleted perforation. Plate 2. Catalogue number 2/3581. Class B specimen.
American Museum of Natural History collection, New York, N. Y.

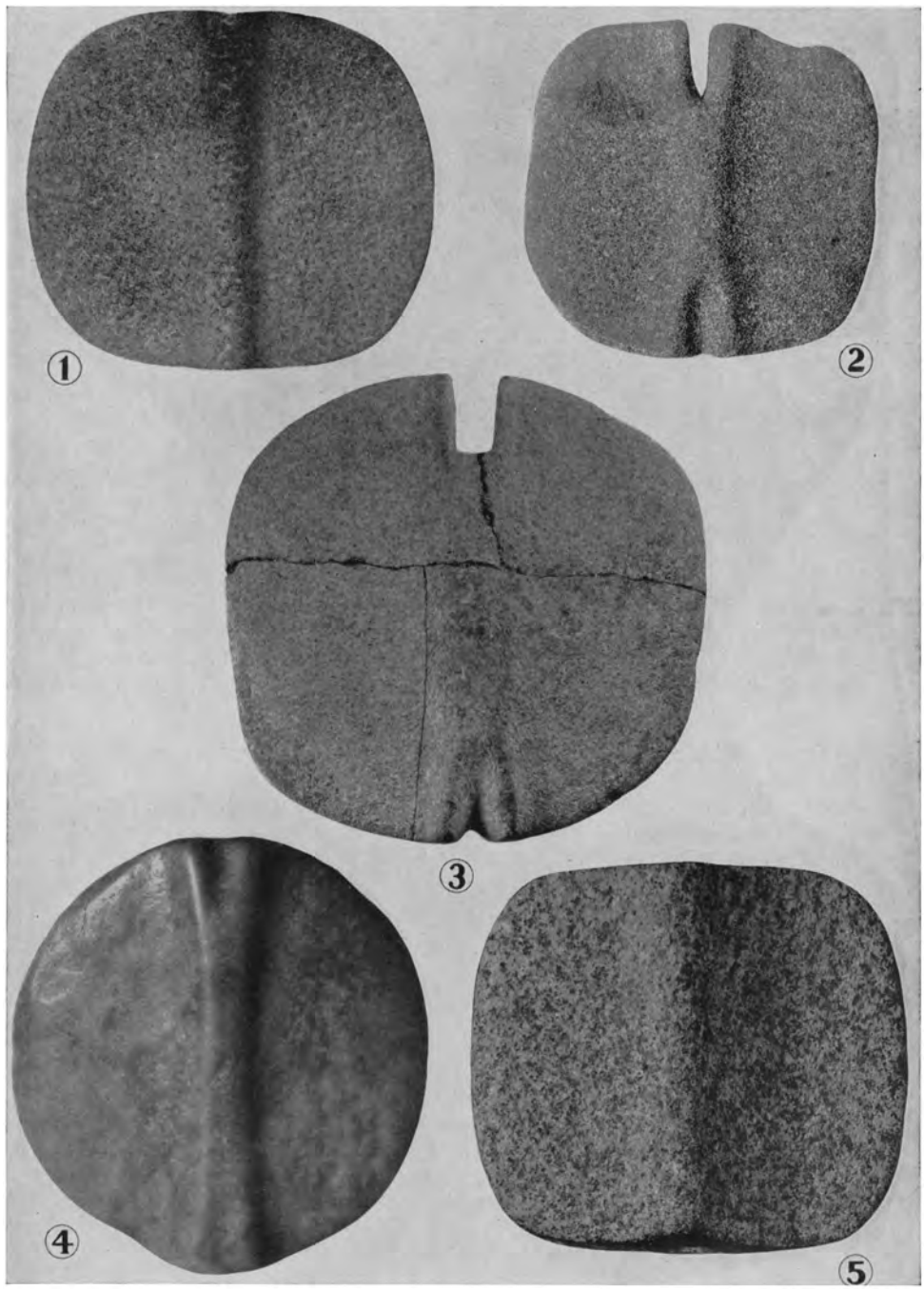


PLATE 171

EXPLANATION OF PLATE 172

NOTCHED OVATE GROUP

Notched Ovate Types No. 15 of Various Materials Mainly from the Primary and Lower Alleghany Areas

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—De Soto County, Florida. Material, data unobtained. Found twelve miles west of the town of Wauchula. Schenck Alexander, Case 18, Catalogue number 317061, Neg. No. 24581G. Size 5 5/8 x 5 1/4 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—Georgia, County unknown. Material, diabase, incompleted perforation. Plate 2. Catalogue number 2/2205. Size 4 1/8 x 4 5/8 inches.
American Museum of Natural History collection, New York, N. Y.

No. 3—Georgia, County unknown. Material, spotted granite. This specimen is illustrated in *Stone Ornaments of The American Indian*, by Warren K. Moorehead, on page 119, Fig. 95. Neg. Nos. 24581F-29274-(2). Size 4 1/8 x 5 1/8 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 4—Oconee County, Georgia. Material, lime-stone. It is very apparent that this specimen is unfinished, and the maker undoubtedly intended to make a secondary notch. W. McKinley exhibition. Catalogue number 27983. Neg. No. 24581F. Size 6 1/2 x 5 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—North Carolina, County unknown. Material, data unobtained, probably steatite or granite. W. S. Yeates, Case 18, Catalogue number 148661. Neg. No. 24581-D. Size 4 x 3 3/4 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 6—Carroll County, Arkansas. Material, semi-translucent ferruginous quartz, beautifully mottled with white, pink, red, orange and brown. Found near Kings River. This specimen is very unusually designed and shows remarkable workmanship, and is probably the only one of this kind so far discovered. It is, however, the only one of its kind observed by the writer. After analyzing its construction by the lines and planes, the writer has classified it as a single notched pattern belonging to this type group. The perforation is conical in shape, and was drilled with a solid stick from the unnotched end. Catalogue number 25478. Size 4 x 3 3/8 inches.
F. P. Hills collection, Delaware, Ohio

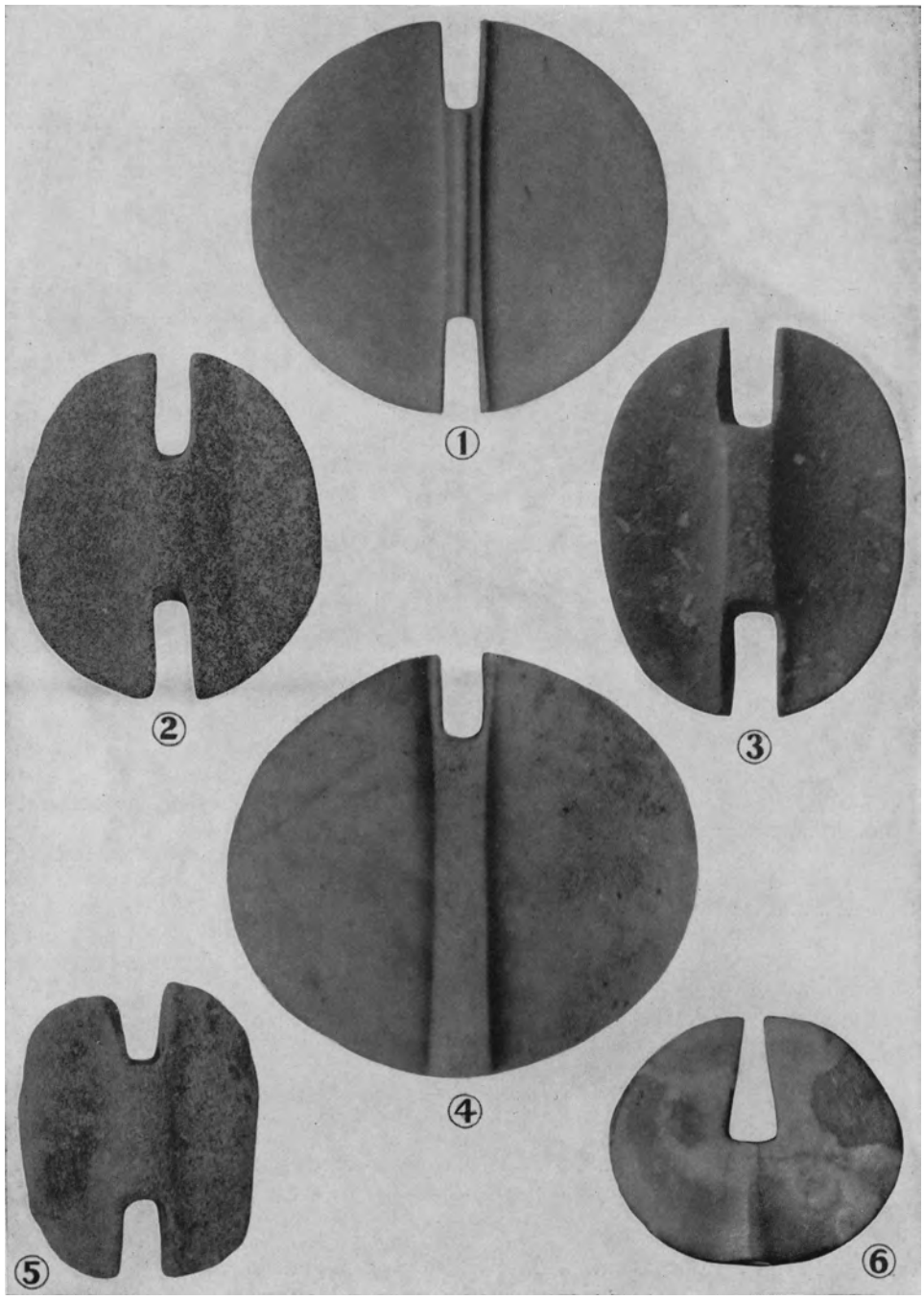


PLATE 172

EXPLANATION OF PLATE 173

NOTCHED OVATE GROUP

Unfinished Notched Ovate Patterns of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/14 actual size

No. 1—Genesee County, Michigan. Material, light grayish green banded-slate. This specimen is unfinished, but the perforation 1/4 inch in diameter which was drilled from each end is completed. Size 4 3/4 x 5 3/4 inches.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 2—Allegan County, Michigan. Material, green banded-slate. The drilling of the perforation was just started. Size 5 3/8 x 5 5/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—Howard County, Indiana. Material, green banded-slate. This specimen is very unusual and interesting because of the presence of the two holes that were carefully pecked through the stone to lessen the danger of breakage while forming the delicate prongs Floor exhibition. B. W. Everman. Neg. Nos. 24581-98436. Size 3 7/8 x 4 1/4 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 4—Illinois, County unknown. Material, dark green faintly banded-slate. Size 4 3/4 x 4 3/4 inches.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 5—Washtenaw County, Michigan. Material, light banded-slate, no evidence of drilling. Size 5 5/8 x 5 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—Franklin County, Ohio. Material, blue banded-slate. Size 4 1/4 x 4 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 7—Macomb County, Michigan. Material, gray slate, faintly banded. Found near the town of Romeo. This specimen is very interesting because of the presence of the two holes that were carefully pecked through the stone, and also because the presence of the chipping which indicates that it was probably made from quarried material. Size 4 3/8 x 4 1/4 inches. Catalogue number 551.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 8—Warren County, Ohio. Material, green banded-slate. Note that the start to make one notch was made by sawing. Size 5 3/8 4 x 4 1/4 inches.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 9—De Kalb County, Indiana. Material, green banded-slate. Size 4 3/4 x 5 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

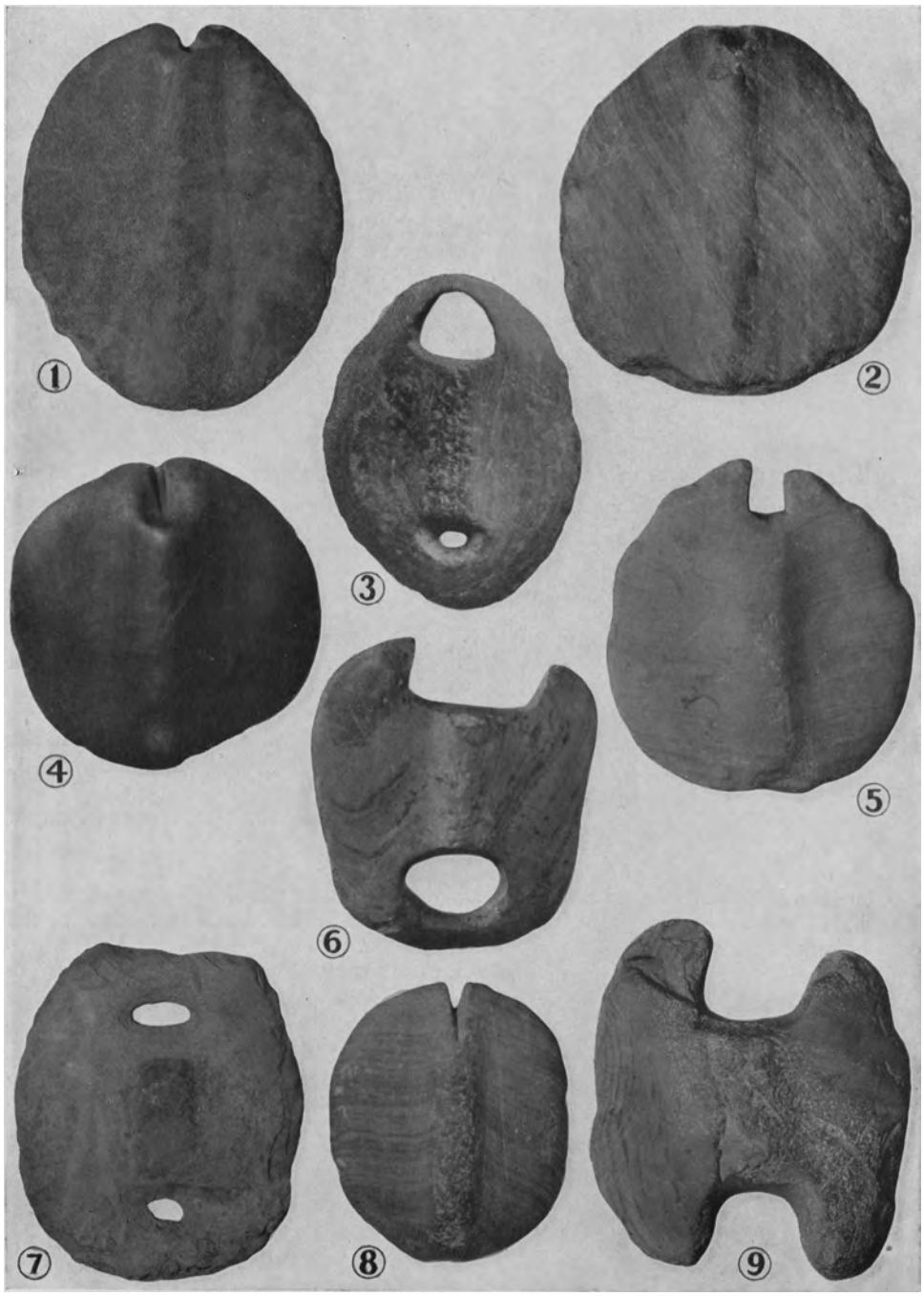


PLATE 173

EXPLANATION OF PLATE 174

NOTCHED OVATE GROUP

Types No. 27 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/3 actual size

The four types shown in this illustration are very interesting because of the fact that one can observe the evolution of the notches, by starting with the specimen with small notches, and ending with the specimen with highly developed expanding notches.

No. 1—EATON COUNTY, MICHIGAN. Material, green banded-slate. Note the small angular shaped notches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 2—HILLSDALE COUNTY, MICHIGAN. Material, green banded-slate. Note that the notches in this specimen are similar to those of the specimen illustrated under No. 1, but are considerable deeper.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—KENT COUNTY, MICHIGAN. Material, green banded-slate. Note that the notches in this specimen are larger than those illustrated under No. 1 and No. 2 and instead of being angular in shape they are more rounding.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—KENT COUNTY, MICHIGAN. Material, blue banded-slate. Note that the rounding notches in this specimen are considerable larger than those illustrated under No. 3.
Donald O. Boudeman collection, Kalamazoo, Michigan

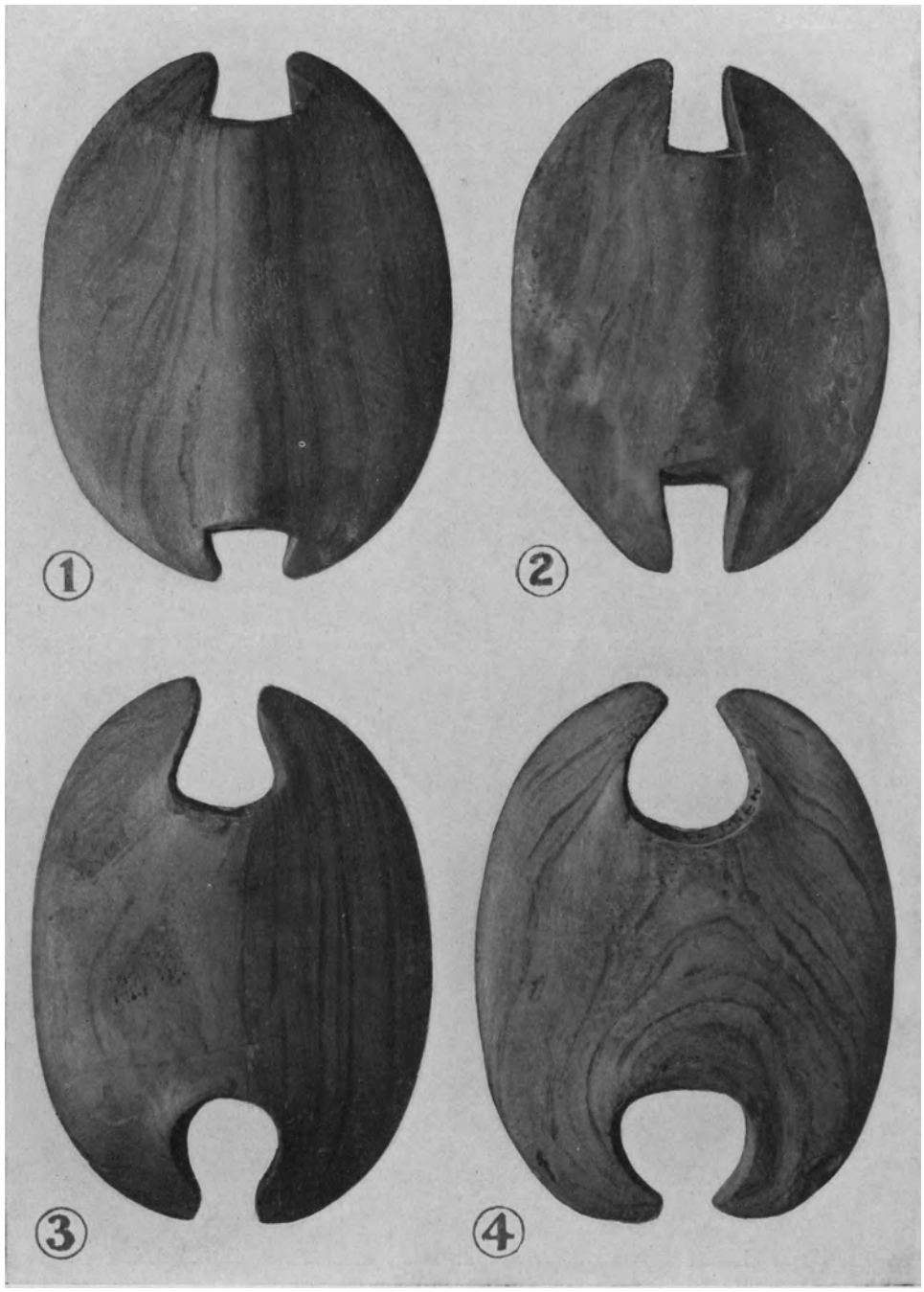


PLATE 174

EXPLANATION OF PLATE 175

NOTCHED OVATE GROUP

Types No. 27 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/11 actual size

No. 1—DELAWARE COUNTY, INDIANA. Material, dark green banded-slate, highly polished. Size 4 1/4 x 3 inches. Collected by the author.
E. L. Renno collection, St. Charles, Missouri

No. 2—DELAWARE COUNTY, OHIO. Material, green banded-slate. Found in Kingston Twp. Size 4 1/4 x 3 1/2 inches. Catalogue number 15241.
F. P. Hills collection, Delaware, Ohio

No. 3—LUCAS COUNTY, OHIO. Material, green banded-slate, discolored from age. Formerly in the Leslie Hill and E. W. Payne collections. Size 4 1/2 x 3 1/2 inches.
B. W. Stephens collection, Quincy, Illinois

No. 4—AUGLAIZE COUNTY, OHIO. Material, green banded-slate. Found near the town of St. Mary's. Size 4 x 3 1/2 inches. *F. P. Hills collection, Delaware, Ohio*

No. 5—ERIE COUNTY, OHIO. Material, blue banded-slate, beautifully marked. Found near Lake Erie. Size 4 1/2 x 3 1/2 inches. Neg. No. 5905.
F. P Hills collection, Delaware, Ohio

No. 6—BOND COUNTY, ILLINOIS. Material, green banded-slate, faintly banded. Size 4 1/2 x 4 1/4 inches. *E. L. Renno collection, St. Charles, Missouri*

No. 7—DELAWARE COUNTY, OHIO. Material, dark green banded-slate. Size 5 1/2 x 4 1/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 8—OHIO, County unknown. Material, blue banded-slate. Size 5 1/2 x 4 inches. Catalogue number 89. *From the author's collection*

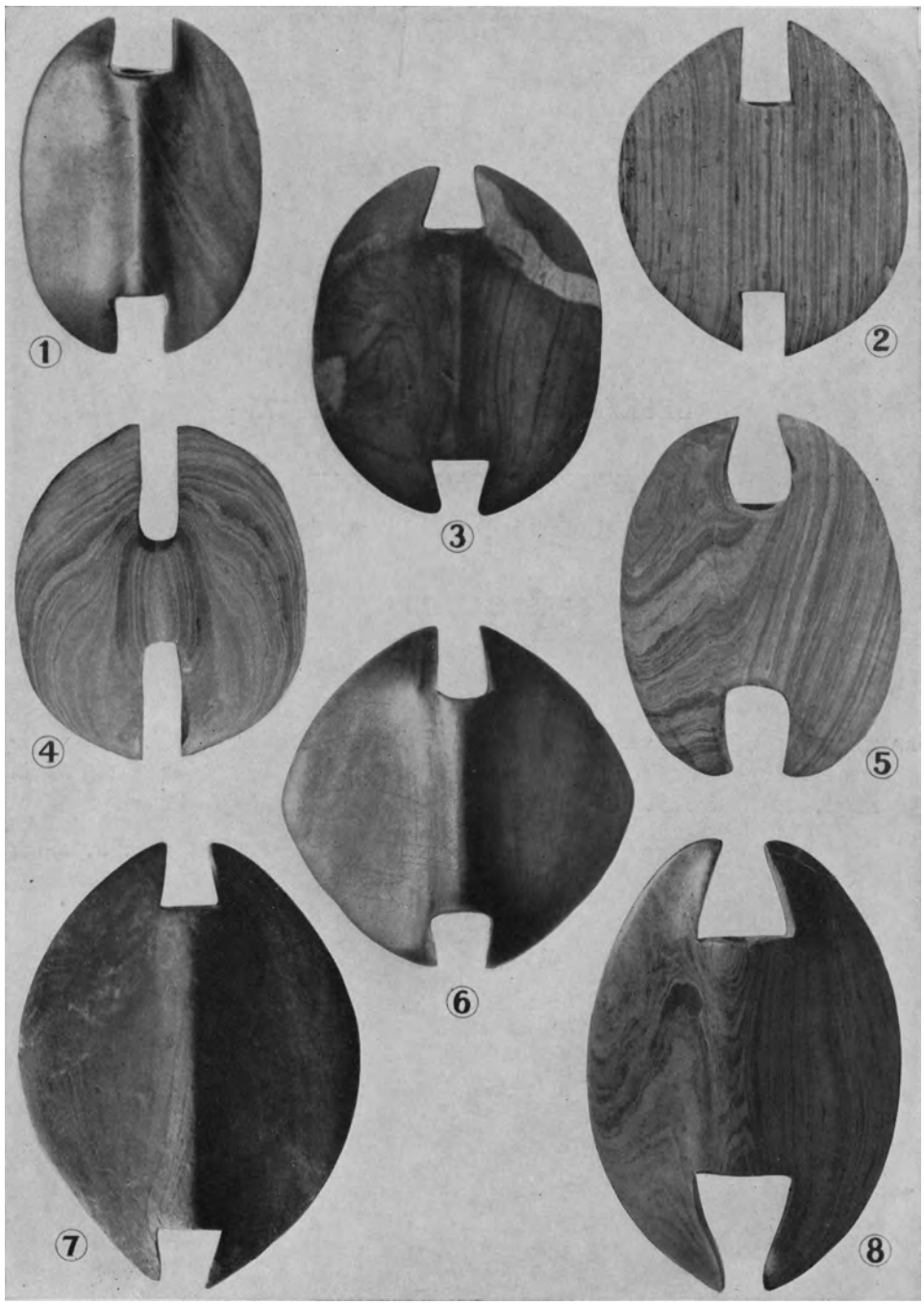


PLATE 175

EXPLANATION OF PLATE 176

NOTCHED OVATE GROUP

Type No. 27 of Banded-slate Material from the Heart Area

CLASS C SPECIMEN

Plate actual size

BRANCH COUNTY, MICHIGAN. Material, banded-slate, beautifully marked. The workmanship displayed on this specimen is superb. Note that the notches are angular in shape, and the tips of the prongs show on the inner side small raised areas.

From the collection of C. C. Benedict, Decatur, Illinois

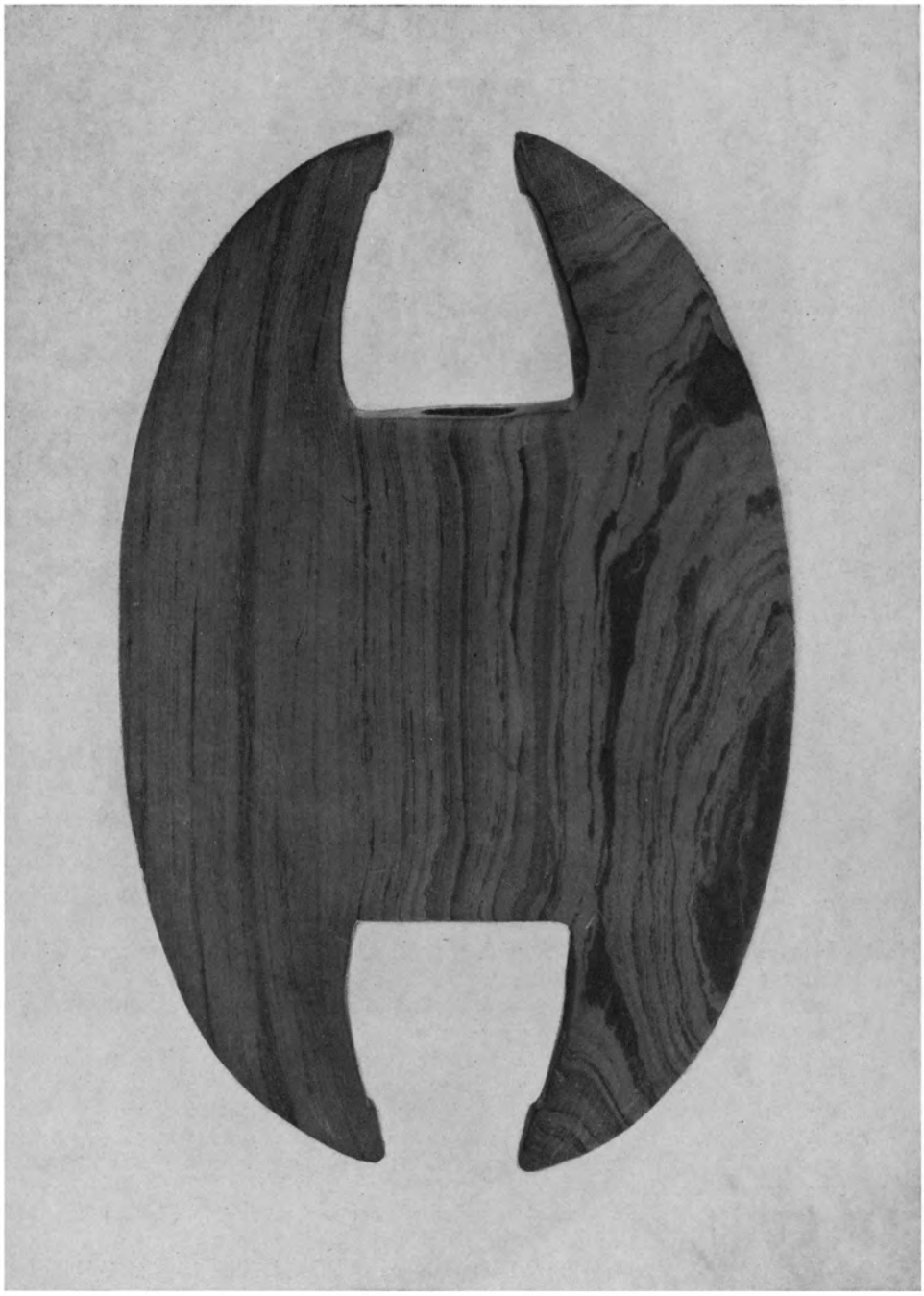


PLATE 176

EXPLANATION OF PLATE 177

NOTCHED OVATE GROUP

Types No. 27 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—SANDUSKY COUNTY, OHIO. Material, banded-slate, covered with a heavy brown coat of patina. Size 4 1/4 x 5 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 2—FRANKLIN COUNTY, INDIANA. Material, green banded-slate. This is the smallest specimen of this type the writer has come in contact with. Because it is so small, and shows poor workmanship, one may believe that it is the result of a cultural decline. Formerly in the E. W. Payne collection.
Sprague W. Chambers collection, Kalamazoo, Michigan

No 3—FRANKLIN COUNTY, OHIO. Material, green banded-slate. Size 4 1/4 x 5 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 4—WYANDOT COUNTY, OHIO. Material, blue banded-slate. This is probably the largest and finest specimen so far discovered. Formerly in the E. W. Payne collection. Size 5 1/2 x 6 inches. *Dr. Rolland Bunch collection, Muncie, Indiana*

No. 5—MARION COUNTY, OHIO. Material, green banded-slate. Found by J. H. Nickelson, near the town of Prospect in 1917. Size 3 1/2 x 4 1/2 inches. Catalogue number 12536. *F. P. Hills collection, Delaware, Ohio*

No. 6—BUTLER COUNTY, OHIO. Material, green banded-slate, faintly banded. Size 4 x 3 7/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—HARDIN COUNTY, OHIO. Material, green banded-slate, discolored from age. This specimen is highly developed. Size 4 1/2 x 4 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 8—TUSCARAWAS COUNTY, OHIO. Material, green banded-slate. The two corresponding specimens Nos. 8 and 9 are very unusual because of the fact they have but one notch. It is difficult to say whether or not these single-notched patterns were considered by their makers as being finished or unfinished. One may believe that these two specimens are unfinished and the makers probably intended to make secondary notches. Size 4 3/4 x 3 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 9—COLUMBIANA COUNTY, OHIO. Material, blue banded-slate. Size 4 1/4 x 3 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

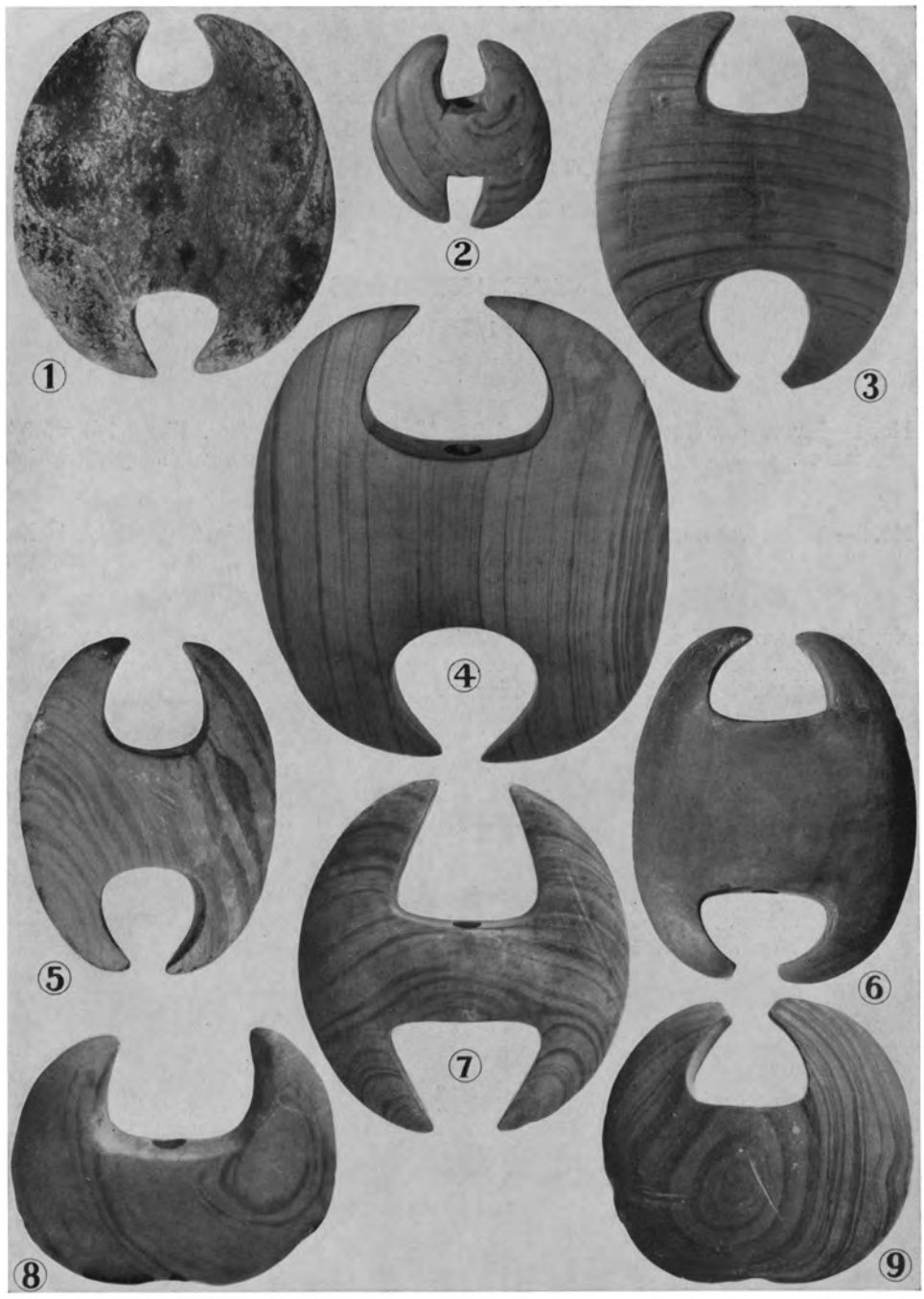


PLATE 177

EXPLANATION OF PLATE 178

NOTCHED OVATE GROUP

Types No. 27 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—Livingston County, Illinois. Material, green banded-slate. Size 3 1/4 x 3 3/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 2—Eaton County, Michigan. Material, blue banded-slate. Size 3 5/8 x 3 1/2 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 3—Clinton County, Indiana. Material, blue banded-slate, beautifully marked and polished. Found two miles north of the town of Jefferson, by M. C. Knapp while plowing, in May 1925. Size 4 x 4 inches. Catalogue number 3.
C. E. Sisk collection, Sidney, Indiana

No. 4—Marion County, Indiana. Material, green banded-slate. Size 4 3/8 x 4 1/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 5—Ohio, County unknown. Material, plain unbanded-slate. Size 4 7/8 x 4 3/8 inches. Neg. No. 16/3089.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 6—Cape Girardeau County, Missouri. Material, green banded-slate. Found during the excavating for the building of the Cape Girardeau Hotel at Cape Girardeau, Missouri. This specimen is extremely interesting because of the two small notches on the blade of each wing, which clearly shows the early development of the Double Crescent patterns from the Notched Ovate patterns. Because of the fact that these two notches are present, regardless of their size, this specimen should rightfully be classified as a Double Crescent pattern. Formerly in the E. W. Payne collection.
Donald O. Boudeman collection, Kalamazoo, Michigan

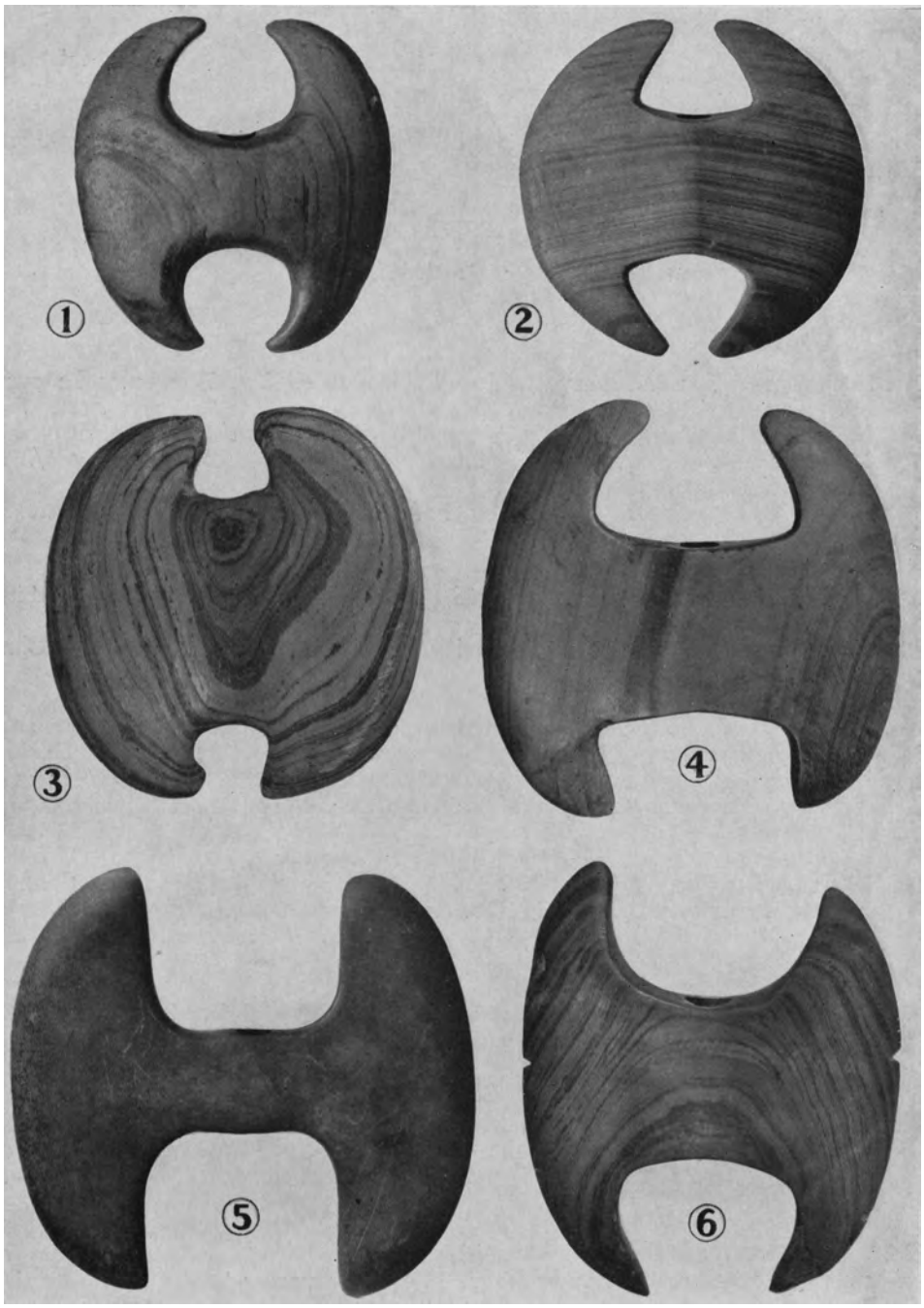


PLATE 178

EXPLANATION OF PLATE 179

NOTCHED OVATE GROUP

Double Crescent Types No. 28 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—BLACKFORD COUNTY, INDIANA. Material, blue banded-slate. Found near the town of Mountpelier. This specimen and the corresponding one No. 2 are very interesting because the small notches on each of the blades show the early development of the Double Crescent patterns from the Notched Ovate, Type No. 27. Size 4 1/2 x 4 3/8 inches. Catalogue number 30.
E. L. Renno collection, St. Charles, Missouri

No. 2—WARREN COUNTY, OHIO. Material, green banded-slate, faintly banded. Size 4 1/4 x 4 1/2 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 3—DELAWARE COUNTY, OHIO. Material, green banded-slate. This specimen and the one illustrated under No. 4 are the largest and most beautifully designed Double Crescent patterns that the writer has come in contact with. Size 6 1/2 x 4 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 4—DELAWARE COUNTY, OHIO. Material, light blue banded-slate. Found on Central Avenue in the city of Delaware in 1923. Size 6 1/8 x 5 3/8 inches. Catalogue number 24500.
F. P. Hills collection, Deleware, Ohio

No. 5—WASHTENAW COUNTY, MICHIGAN. Material, green banded-slate. Size 4 1/8 x 2 1/2 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—DELAWARE COUNTY, INDIANA. Material, dark green banded-slate. Found on the McKenley Farm, and formerly in the Mock collection. Size 5 x 4 1/2 inches.
Dr. Rolland Bunch collection, Muncie, Indiana

No. 7—ERIE COUNTY, NEW YORK. Material, green banded-slate, discolored a rich brown from age. Found near Niagra Falls. Size 4 5/8 x 4 1/2 inches.
Dr. A. W. Pendergast collection, Fairbury, Illinois

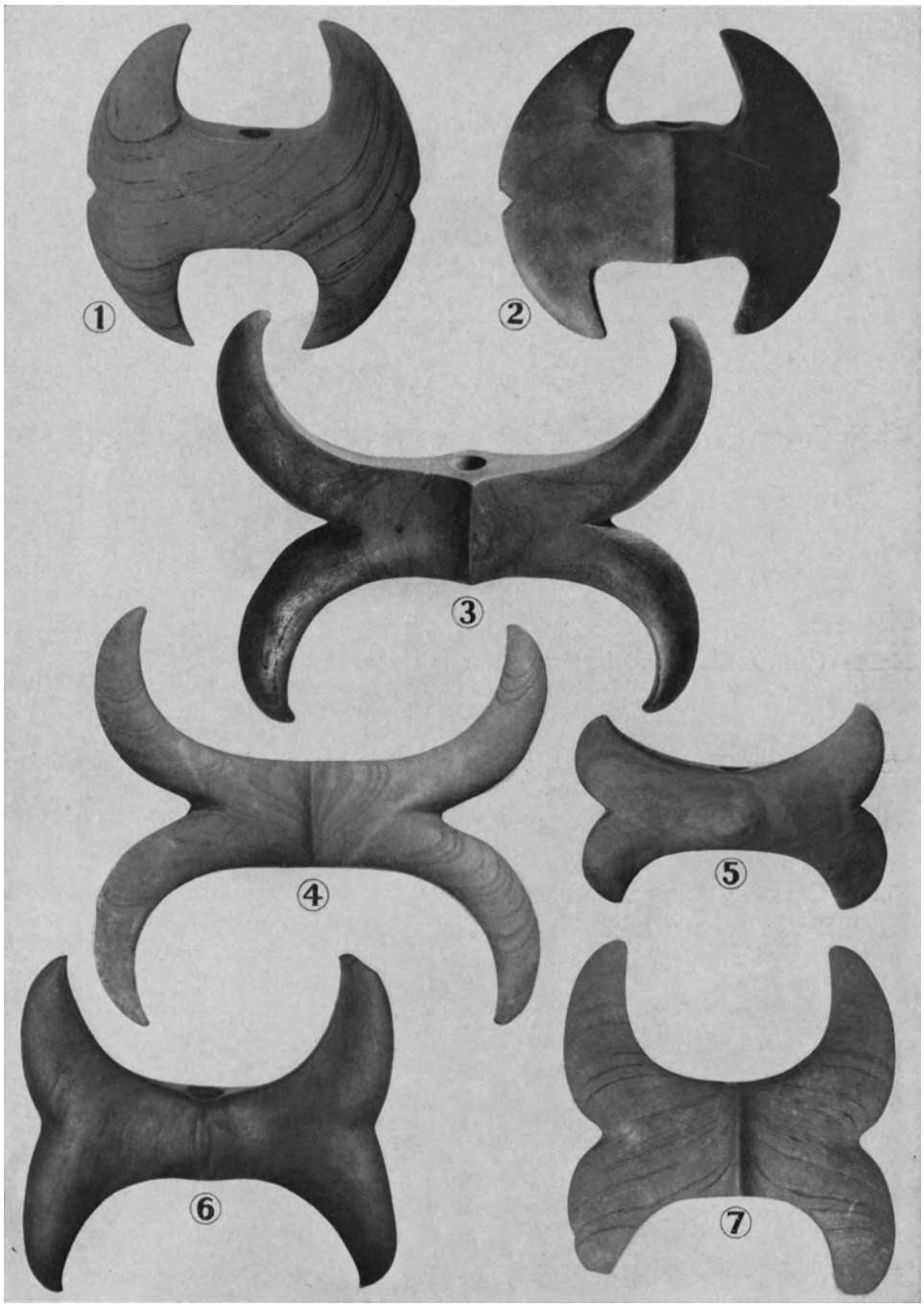


PLATE 179

EXPLANATION OF PLATE 180

NOTCHED OVATE GROUP

Double Crescent Types No. 28 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—Clinton County, Michigan. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—Branch County, Michigan. Material, light blue banded-slate, discolored from age. Size 7 inches wide. This specimen is partly restored.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—Calhoun County, Michigan. Material, green banded-slate, discolored brown from age. *Donald O. Boudeman collection, Kalamazoo, Michigan*

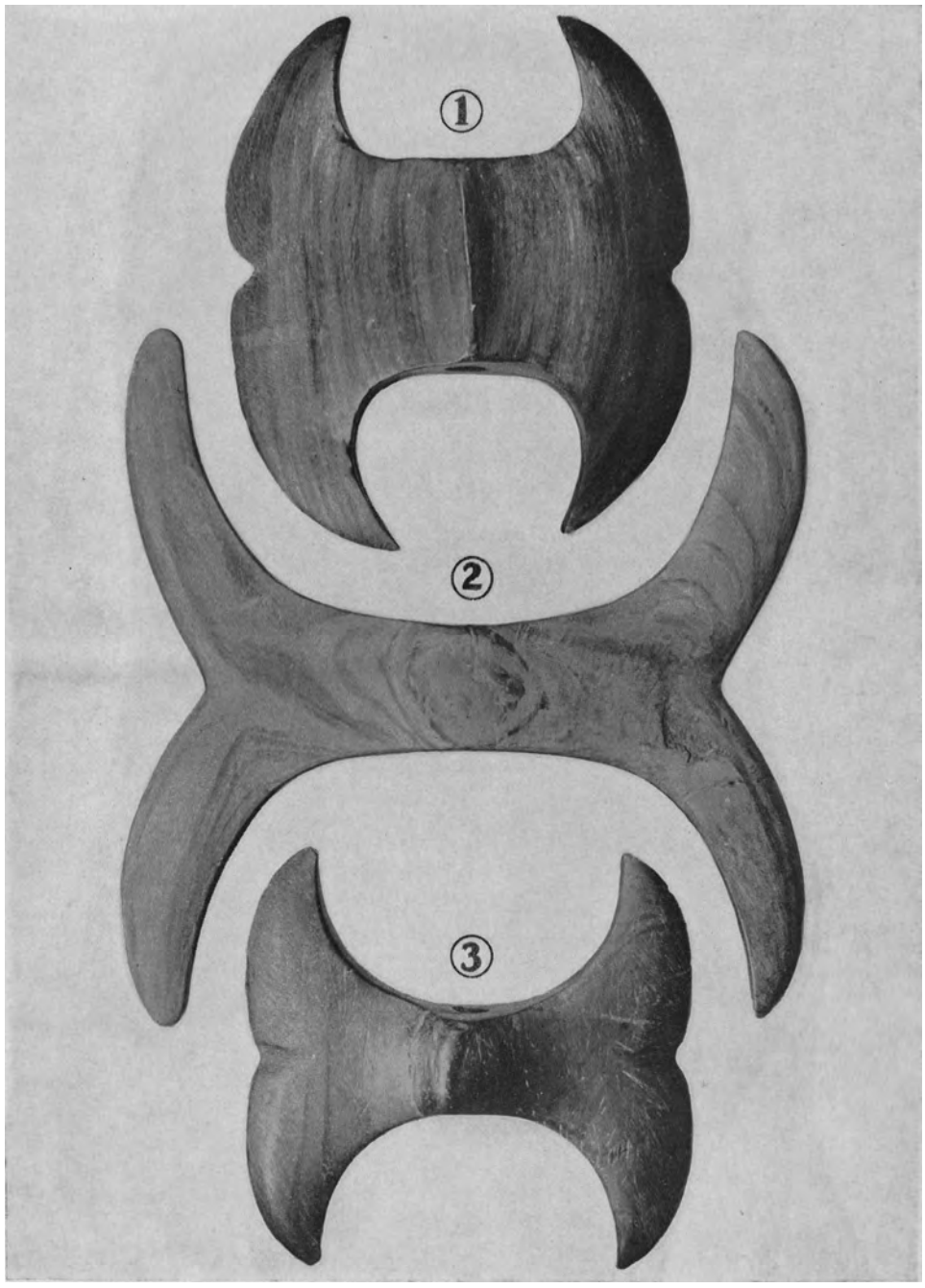


PLATE 180

EXPLANATION OF PLATE 181

NOTCHED OVATE GROUP

Double Crescent Types No. 28 of Granite and Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/11 actual size

No. 1—St. Croix County, Wisconsin. Material, fine grain green granite. Found on the Michael Dellom Farm located in the northeast 1/4 of section 6 in the town of Hammond, by Mr. Dellon's son in 1891. Specimens of this type made of any other material than banded-slate are extremely rare. Formerly in the Joseph Ringeisen Jr. collection, Milwaukee, Wisconsin. Size 6 x 4 3/4 inches.

Milwaukee Public Museum collection, Milwaukee, Wisconsin

No. 2—Parke County, Indiana. Material, green banded-slate. The lower left hand prong of this specimen is restored. Size 6 x 5 3/4 inches. Catalogue number 4/8575.

Museum of the American Indians, Heye Foundation collection, New York, N. Y.

No. 3—Kent County, Michigan. Material, light green banded-slate, discolored brown from age. Size 6 x 6 1/4 inches.

Donald O. Boudeman collection, Kalamazoo, Michigan

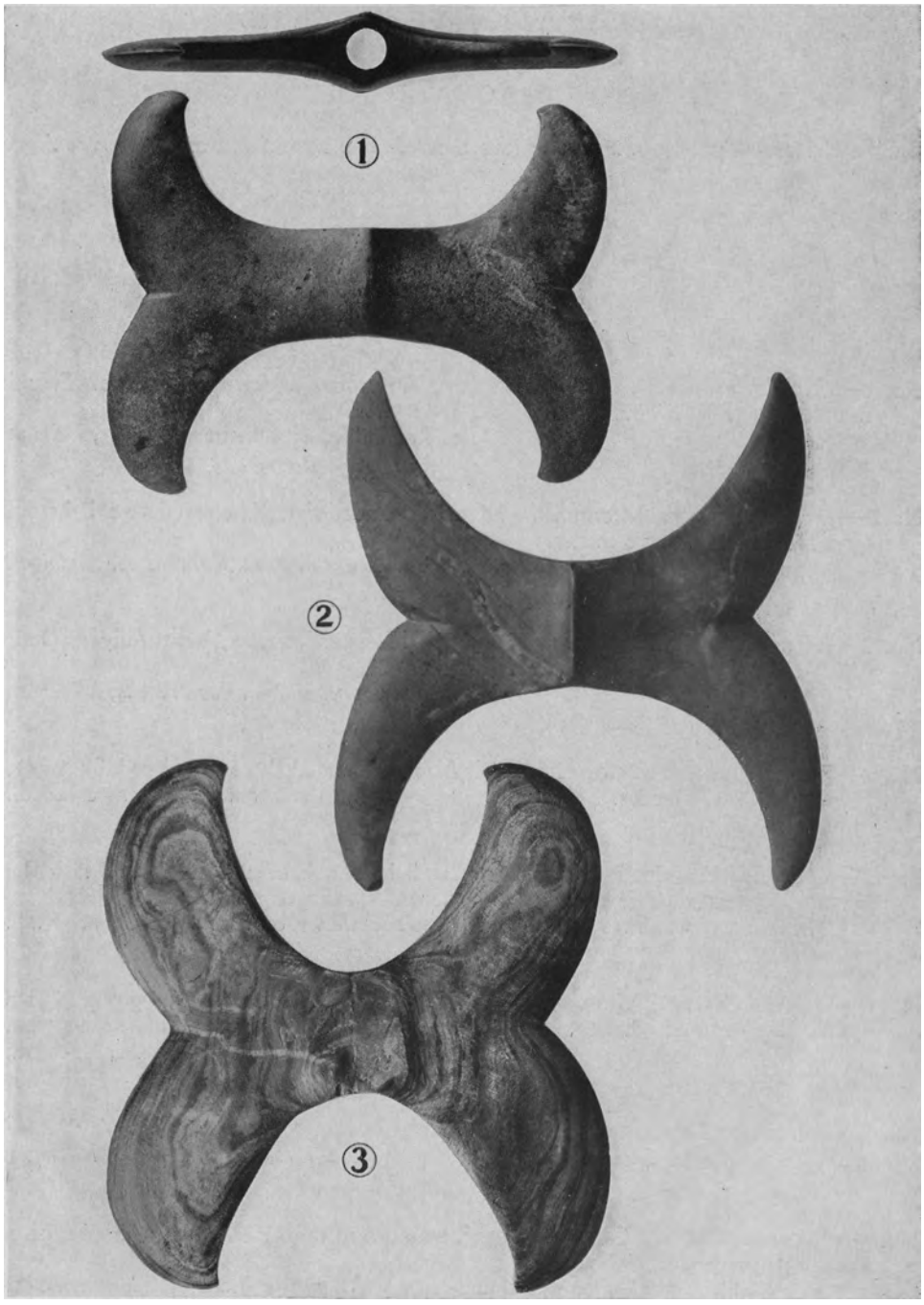


PLATE 181

EXPLANATION OF PLATE 182

NOTCHED OVATE GROUP

Double Crescent Types No. 28 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—HAMILTON COUNTY, OHIO. Material, plain unbanded ferruginous slate. Found near the town of Cincinnati. Size 5 x 2 5/8 inches.
Dr. Rolland Bunch collection, Muncie, Indiana

No. 2—JACKSON COUNTY, MICHIGAN. Material, banded-slate, discolored to a light tan from age. Size 5 5/8 x 3 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—EATON COUNTY, MICHIGAN. Material, blue banded-slate, beautifully marked. Size 3 1/2 x 4 1/4 inches. Catalogue number 422.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 4—SHELBY COUNTY, OHIO. Material, black unbanded-slate, discolored from age. Size 6 1/4 x 3 1/4 inches. *From the author's collection*

No 5—KANKAKEE COUNTY, ILLINOIS. Material, light blue banded-slate. Found near the town of Momence. Size 5 1/8 x 4 1/4 inches. Catalogue number 13/9478.
Museum of the American Indians, Heye Foundation collection, New York, N. Y.

No. 6—JACKSON COUNTY, MICHIGAN. Material, blue banded-slate. One prong of this specimen is restored. Size 6 1/4 x 3 7/8 inches. Formerly in the author's collection.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 7—INGHAM COUNTY, MICHIGAN. Material, green banded-slate. Size 5 3/4 x 4 1/8 inches. Catalogue number 507. *Dr. B. J. Moss collection, East Tawas, Michigan*

No. 8—FRANKLIN COUNTY, OHIO. Material, plain green unbanded-slate, covered with a coat of patina from age. Size 5 3/4 x 6 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

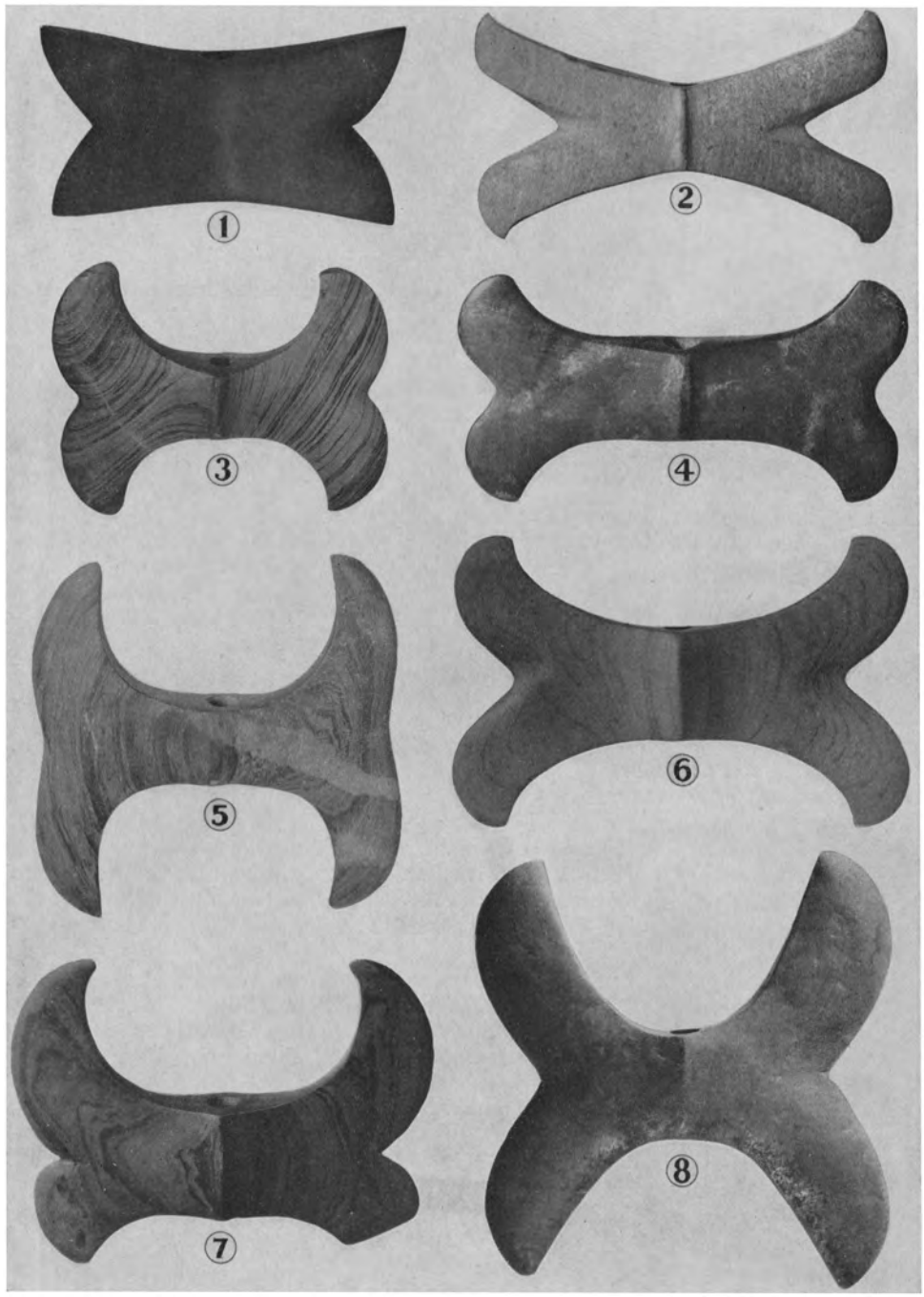


PLATE 182

EXPLANATION OF PLATE 183

NOTCHED OVATE GROUP

Double Crescent Types No. 28 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—ALLEN COUNTY, MICHIGAN. Material, blue banded-slate. Surface polished. This specimen is made of exceptionally beautiful material and shows remarkable workmanship. Collected by Sprague W. Chambers, Kalamazoo, Michigan. Size 4 1/4 x 4 1/8 inches. *From the author's collection*

No. 2—AUGLAIZE COUNTY, OHIO. Material, plain unbanded-slate. Found near the town of Wapokoneta. Apparently this is the largest specimen of this type so far discovered. Size 8 1/4 x 2 1/2 inches. Neg. No. 6/6386.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 3—ST. CROIX COUNTY, WISCONSIN. Material, green banded-slate, discolored from age. This specimen was found with another similar one which was even larger in size, on the Michael Dellon's Farm by Mr. Dellon's son, in 1891. This farm is located in the northeast 1/4 of section No. 6 in the town of Hammond. Formerly in the Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin. Size 4 7/8 x 4 inches.

Below is an end view of this pattern to show its construction and the tally notches along the edges. This specimen can be classified as a single face Double Crescent because of the fact that the one side shows a raised ridge running parallel with the perforation, while the other side is a more or less flat plane. Undoubtedly the side that shows the flat plane was damaged and was ground down.
Milwaukee Public Museum collection, Milwaukee, Wisconsin

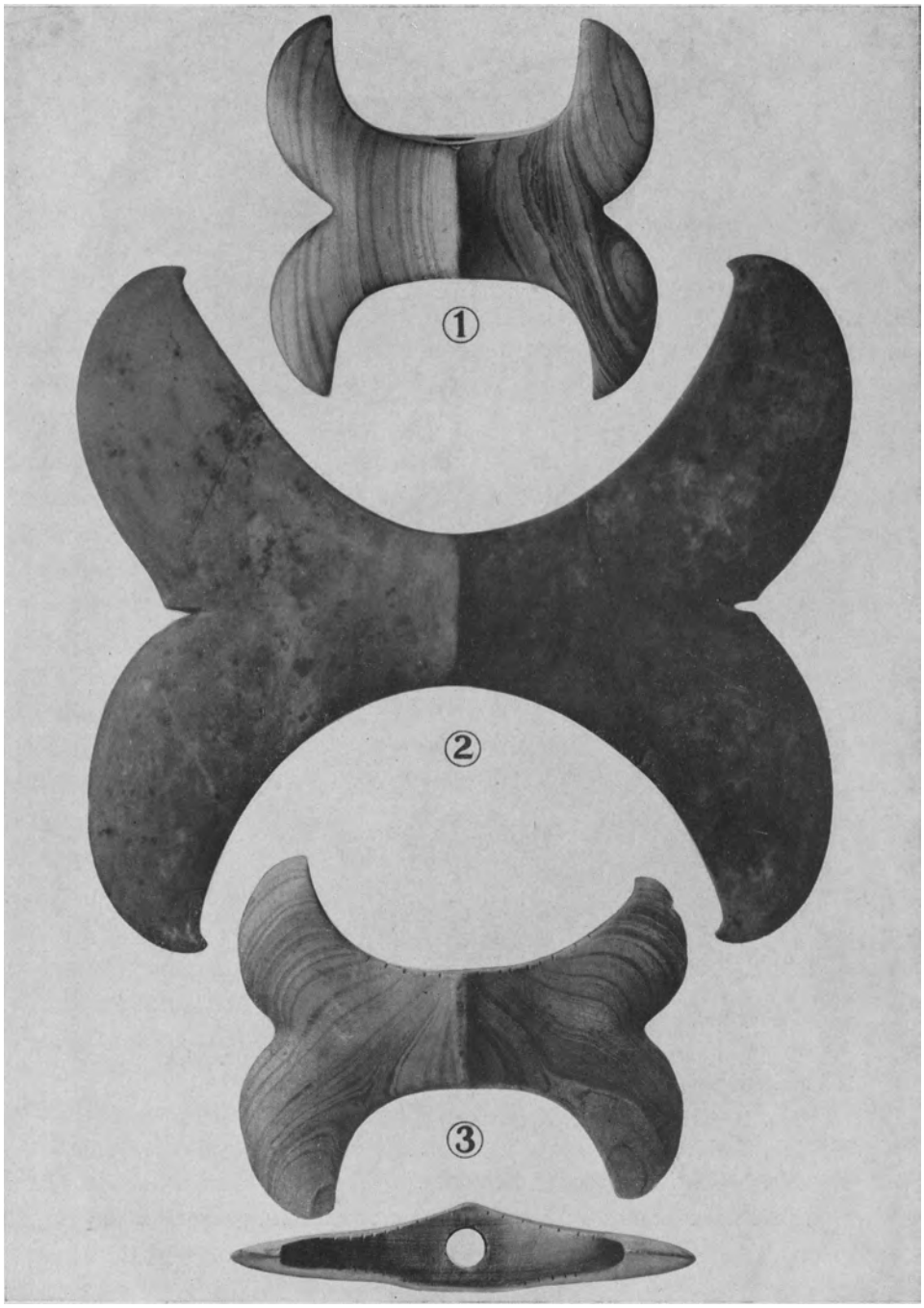


PLATE 183

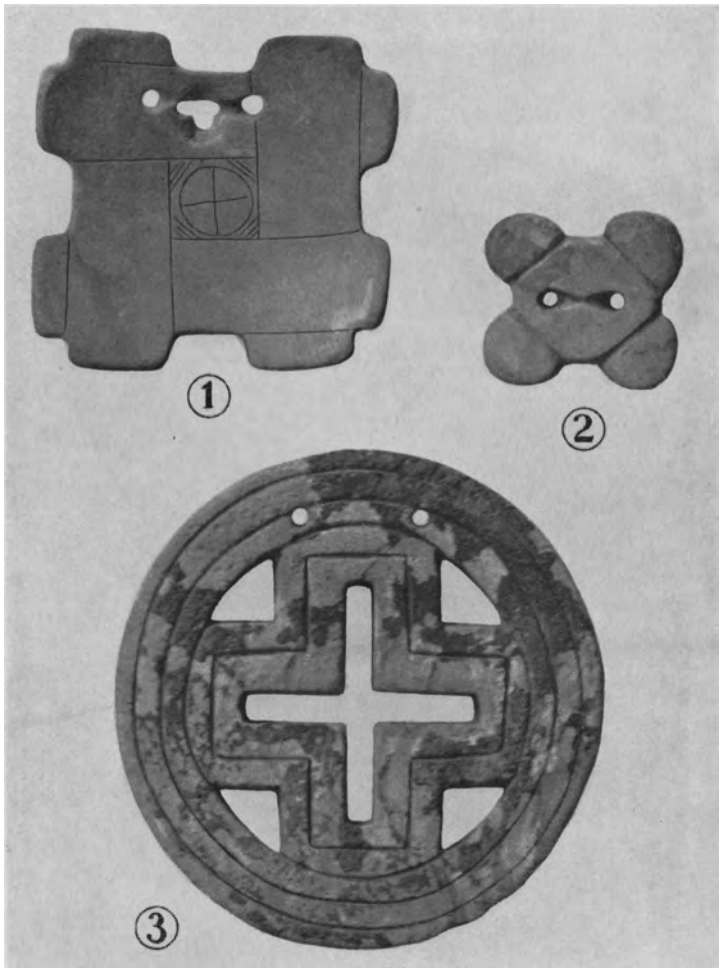


PLATE 184.

Shell gorgets designed to symbolize the number four. On pages 368 and 369 this custom frequently practiced is described.

No. 1—Trigg County, Kentucky.

No. 2—Hamilton County, Tennessee.

No. 3—Christian County, Kentucky.

Plate actual size. FROM B. W. STEPHENS COLLECTION, QUINCY, ILLINOIS

QUARTZ BUTTERFLY GROUP

TYPE No. 16

The evolutionary development of the banner-stones which comprise this group exhibit centuries of struggle. Only after one has carefully studied the evolution of this group and observed the simple design of the *Southern Ovate Primary Form No. 4* from which the beautifully designed ultimate patterns were created, does this struggle become apparent. The earliest made *Butterfly* patterns occur within the Primary Area. Usually these objects are made of various materials, including steatite of many shades, limonite, unattractive granite, and quartzite materials.

One of the most important features one can notice in the study of the evolution of this particular group is the simple manner in which the travel route can be followed from the Primary Area to the Lower Mississippi Valley Area. In the path of this travel route occur great numbers of early made *Butterfly* blending forms. Many of the specimens from the Lower Mississippi Valley Area show underdeveloped lines, while others show lines which are rather highly developed. One must also consider that for many centuries these objects were made in this area.

It is very evident that the Indians who made banner-stones of the *Butterfly* design had gradually worked their way up the Mississippi River, entering the Middle Mississippi Valley Area. Apparently it was in this area that this particular design had reached its highest development. The ultimate patterns of ferruginous quartz show the highest development in stone. These type specimens made of this translucent material are exceptionally beautiful.

Many of the blending forms shown in the accompanying plates are made of miscellaneous materials. But later as the design became more highly developed, the Indian adopted ferruginous quartz to add to the ceremonial significance of these symbols. It is rather difficult to determine the area in which this material was first used. It is very probable, how-

(Continued on Page 416)

EXPLANATION OF PLATE 185

QUARTZ BUTTERFLY GROUP

Blending Forms of Various Materials from the Southern Area and Lower and Middle Mississippi Valley Areas

CLASS B SPECIMENS

Plate 5/11 actual size

No. 1—GEORGIA, County unknown. Material, light gray steatite, discolored tan from age. Hollow reed drilling one-half completed. *From the author's collection*

No. 2—HANCOCK COUNTY, ILLINOIS. Material, gray quartzite. *B. W. Stephens collection, Quincy, Illinois*

No. 3—MONTGOMERY COUNTY, ARKANSAS. Material, light brownish gray, speckled granite. Found on the surface three miles east of Mt. Ida near the south fork of Ouachita River, in 1932. Catalogue number Z-42. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 4—JEFFERSON COUNTY, ILLINOIS. Material, banded-slate. Found near Big Muddy River east of Waltonville in 1929. *Irvin Peithman collection, Carbondale, Illinois*

No. 5—CRAWFORD COUNTY, MISSOURI. Material, tripoli, commonly called "cotton stone." Weight, 675 grains. This specimen was found 2 1/2 feet below the surface in a cremated burial in a small mound or grave, together with a pipe made of the same material and a burnt arrowhead. Limestone slabs were scattered over the burial. This specimen is so crudely made, and of such poor material that one may believe that it was made either by a child, or it is the result of the degeneration of a culture. *Kyle L. Sly collection, St. Louis, Missouri*

No. 6—WEST VIRGINIA, County unknown. Material, black slate. Caralogue number 56089. *Peabody Museum of Harvard University collection, Cambridge, Massachusetts*

No. 7—MONTGOMERY COUNTY, ARKANSAS. Material, reddish brown and gray quartzite. Found on the surface near Ouachita River, near Silver City in 1919. Catalogue number Z-11. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 8—CHENANGO COUNTY, NEW YORK. Material, banded-slate. Found in 1866 by A. Pendleton. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 9—PENNSYLVANIA, County unknown. Material, dark brown slate. Catalogue number 2501. *L. C. Snyder collection, Lacona, New York*

No. 10—MONTGOMERY COUNTY, INDIANA. Material, finely grained sand stone discolored brown from age. Hollow reed drilling just started. Catalogue number 608. *From the author's collection*

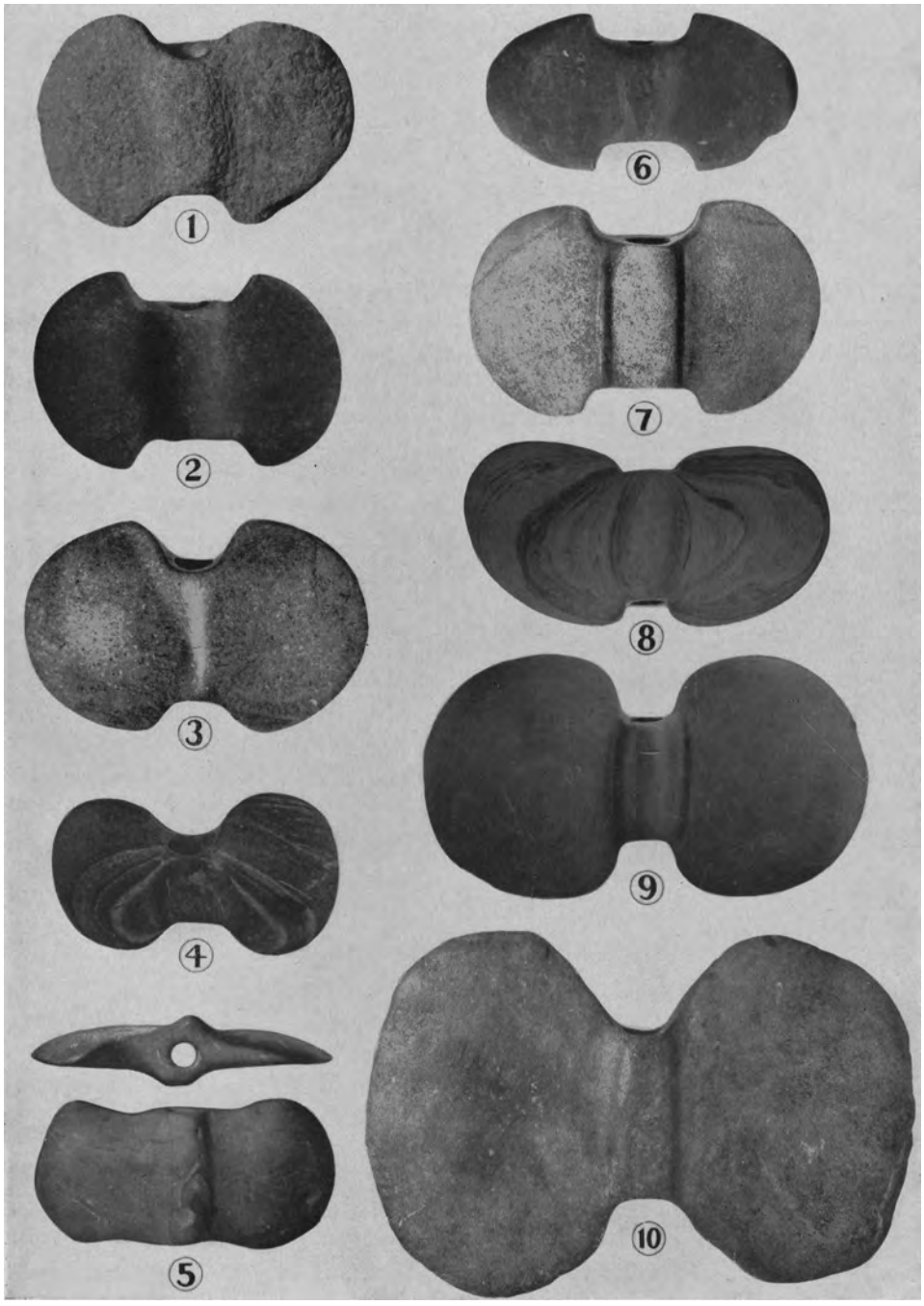


PLATE 185

EXPLANATION OF PLATE 186

QUARTZ BUTTERFLY GROUP

Blending Forms and Types No. 16 of Various Quartz Materials from the Lower and Middle Mississippi Valley Areas

CLASS B AND C SPECIMENS

Plate 5/12 actual size

No. 1—MISSISSIPPI, County unknown. Material, quartzite. Neg. No. 80282.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 2—MISSISSIPPI, County unknown. Material, quartzite. Neg. No. 80282.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—ILLINOIS, County unknown. Found near the mouth of the Illinois River. Collected by F. H. Woodman. Case 18. Neg. No. 24581-A-30191. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 4—MONTGOMERY COUNTY, ARKANSAS. Material, ferruginous quartz. Found near Mazarne Creek in 1914. Class C specimen.
Harry J. Lemley and W. Kendell Lemley collection, Hope, Arkansas

No. 5—MARSHALL COUNTY, KENTUCKY. Material, pink quartz. Class C specimen.
F. P. Hills collection, Delaware, Ohio

No. 6—ALABAMA, County unknown. Material, quartzite. Incompleted drilling.
Alabama Museum of Natural History, Inc. collection, University of Alabama

No. 7—WASHINGTON COUNTY, ILLINOIS. Material, ferruginous quartz. Found near Crooked Creek, in 1928. *Irvin Peithman collection, Carbondale, Illinois*

No. 8—WOOD COUNTY, TEXAS. Material, ferruginous quartz. Found in 1898. Neg. No. 477-A. Class C specimen. *University of Texas collection, Austin, Texas*

No. 9—MASSAC COUNTY, ILLINOIS. Material, ferruginous quartz. Class C specimen.
L. C. Snyder collection, Lacona, New York

No. 10—SALINE COUNTY, ARKANSAS Material, ferruginous quartz. Found near the Saline River in 1922. Class C specimen.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 11—Illustrates an end view of specimen No. 15.

No. 12—YELL COUNTY, ARKANSAS. Material, crystal quartz, no evidence of drilling.
E. L. Renno collection, St. Charles, Missouri

No. 13—CLAIBORNE COUNTY, LOUISIANA. Neg. No. 24581-A-58516. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 14—SCIOTO COUNTY, OHIO. Material, ferruginous quartz. Class C specimen.
F. F. Hills collection, Delaware, Ohio

No. 15—MARQUETTE COUNTY, WISCONSIN. Material, ferruginous quartz. Found near Westfield. Class C specimen. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 16—HANCOCK COUNTY, ILLINOIS. Material, ferruginous quartz. Catalogue number 9. Class C specimen. *From the author's collection*

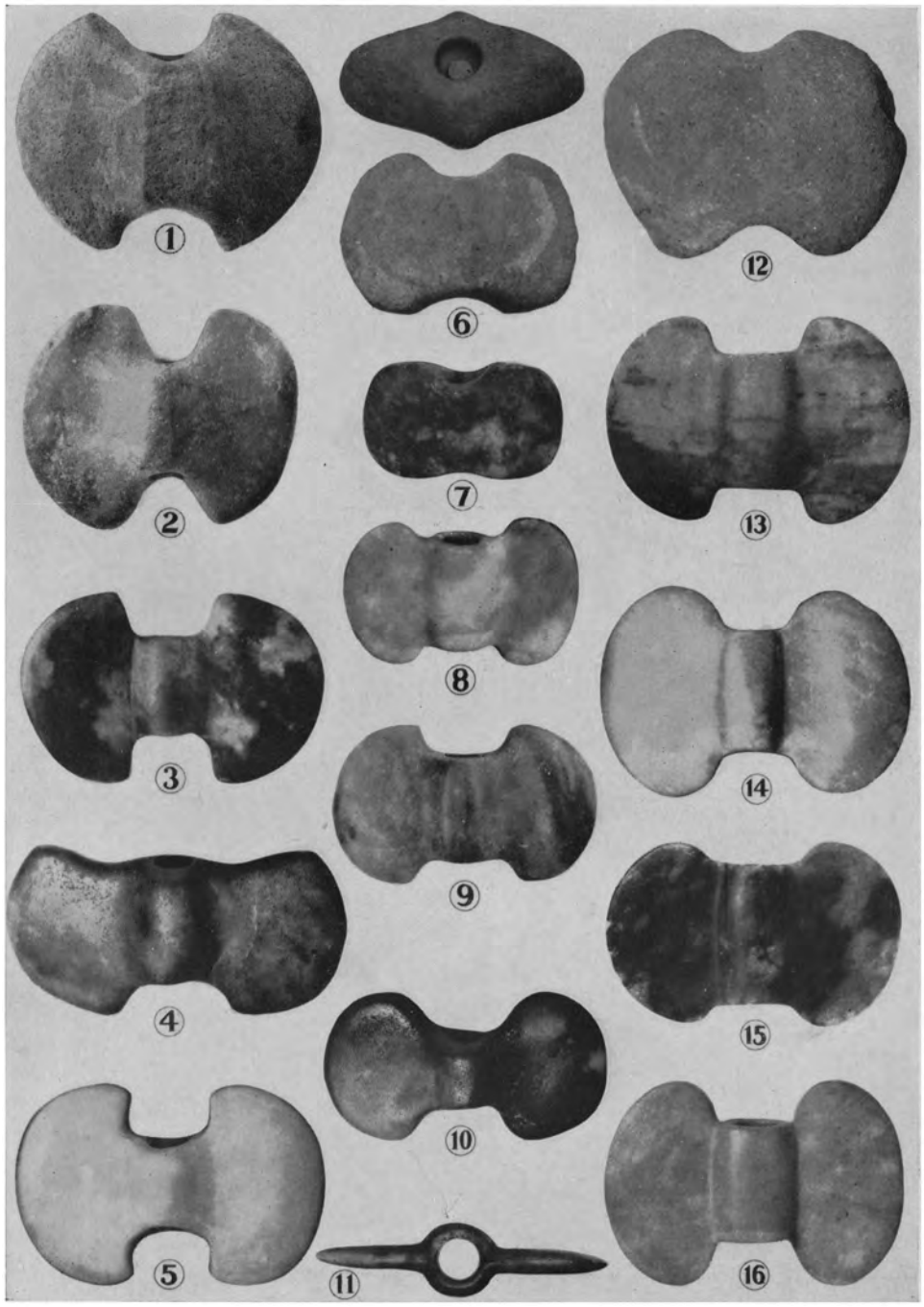


PLATE 186

EXPLANATION OF PLATE 187

QUARTZ BUTTERFLY GROUP

Types No. 16 of Quartz Materials from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 5/6 actual size

No. 1—CENTRAL KENTUCKY, County unknown. Material, mottled ferruginous quartz. Surface polished. *E. W. Payne collection, Springfield, Illinois*

No. 2—MUHLENBURG COUNTY, KENTUCKY. Material, appears to be jasper, deep Indian red color. Found in 1900 on a side of a hill. Size 4 1/2 x 2 3/4 inches. Catalogue number 17. *From the author's collection*

No. 3—CLARK COUNTY, INDIANA. Material, ferruginous quartz, deep red color, clouded with shades of white, highly polished. Size 3 7/8 x 2 1/4 inches. *From the author's collection*

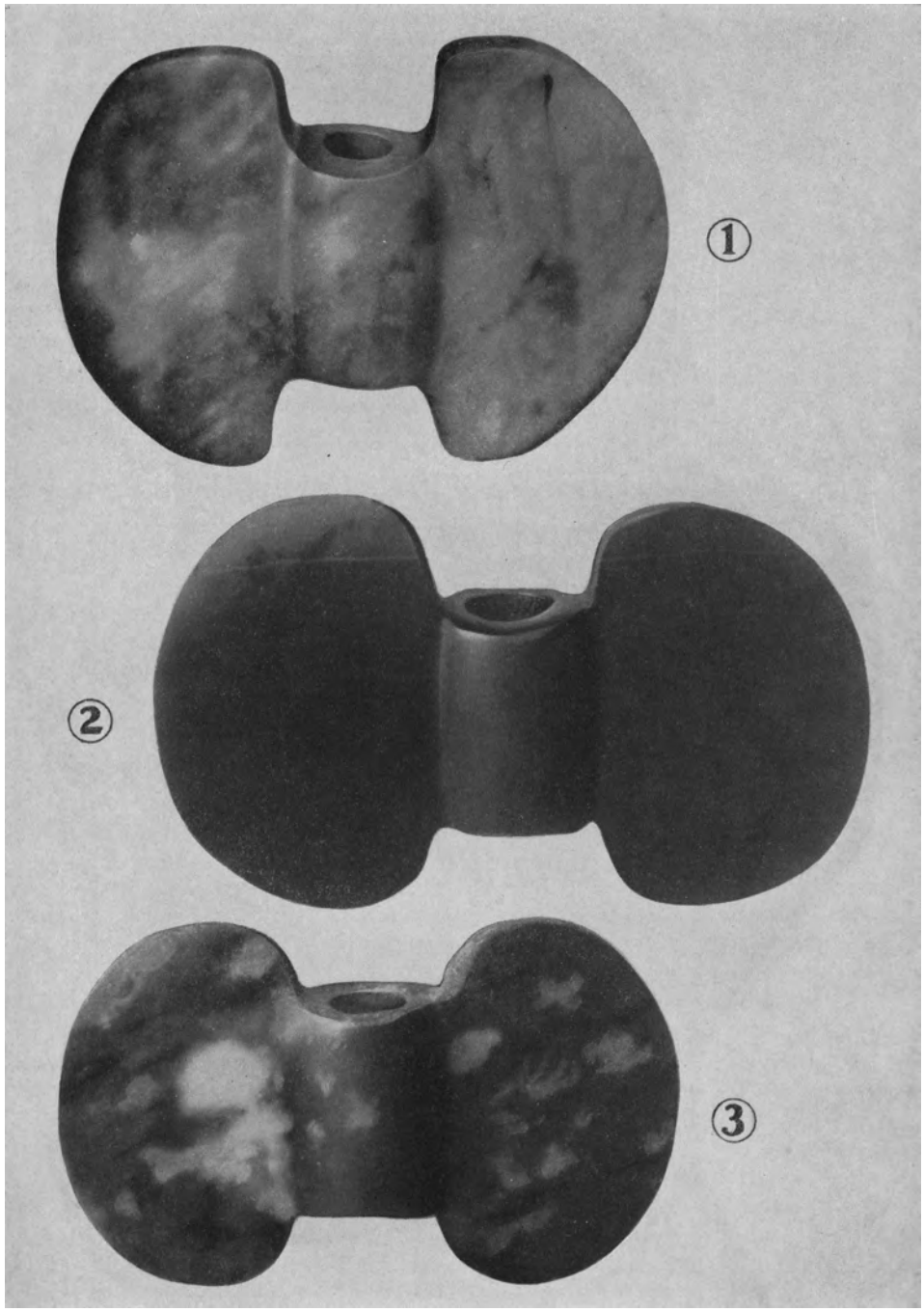


PLATE 187

EXPLANATION OF PLATE 188

QUARTZ BUTTERFLY GROUP

Types No. 16 of Quartz Materials from the Lower and Middle Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—St. Charles County, Missouri. Material, ferruginous quartz, highly polished. Size 3 1/8 x 1 7/8 inches. *E. L. Renno collection, St. Charles, Missouri*

No. 2—Howard County, Arkansas. Material, gray and reddish brown mottled quartz. Found near Mineral Springs in 1933. Incompleted drilling. Catalogue number Z-40. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 3—Shelby County, Illinois. Material, ferruginous quartz, clouded with shades of white, highly polished. *Dr. P. F. Titterington collection, St. Louis, Missouri*

No. 4—Howard County, Arkansas. Material, light tan and reddish brown mottled quartzite. Catalogue number Z-35. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 5—Brown County, Illinois. Material, pink and white ferruginous quartz. *B. W. Stephens collection, Quincy, Illinois*

No. 6—Kentucky, County unknown. Material, pink ferruginous quartz. *F. P. Hills collection, Delaware, Ohio*

No. 7—Marion County, Ohio. Material, light pink ferruginous quartz. *F. P. Hills collection, Delaware, Ohio*

No. 8—Lafayette County, Arkansas. Material, ferruginous quartz. Found on the surface near Clear Bodcaw Creek in Twp. 15. Catalogue number Z-9. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 9—Hendricks County, Indiana. Material, ferruginous quartz. *E. W. Payne collection, Springfield, Illinois*

No. 10—Perry County, Indiana. Material, ferruginous quartz. Found near Cannelton near the Ohio River. Case 18. Neg. No. 24581-A. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 11—Washington County, Pennsylvania. Material, ferruginous quartz. Collected by Gerard Fowke. Case 18. Cat. No. 147748. Neg. No. 24581-A. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 12—West Carroll Parrish, Louisiana. Material, dark red ferruginous quartz. This specimen is a spool from a Butterfly banner-stone with both wings broken off. The ends of the broken wings were ground down but there is still evidence of the wings. This object was probably used as a bead. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 13—Kentucky, County unknown. Material, deep red ferruginous quartz. This specimen is identical to the one shown under No. 12. *From the author's collection*

No. 14—Warren County, Kentucky. Material, pale pink ferruginous quartz with dark red clouded areas. Found near Yanny Cave. Size 3 3/8 x 2 inches. *Ben Neusbaum collection, Fairbury, Illinois*

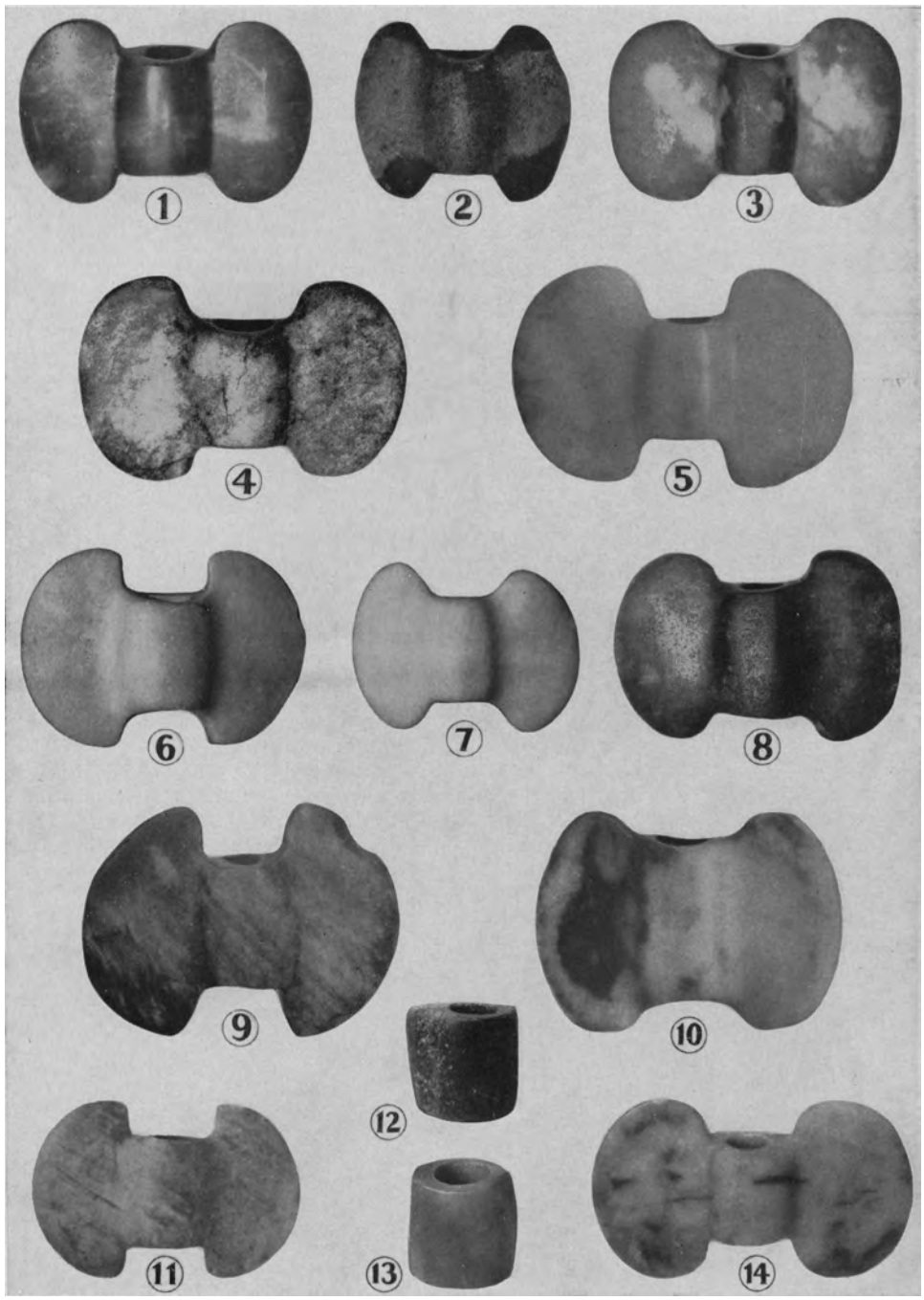


PLATE 188

EXPLANATION OF PLATE 189

QUARTZ BUTTERFLY GROUP

Types No. 16 of Various Quartz Materials from the Middle Mississippi Valley Area

CLASS B and C SPECIMENS

Plate 7/10 actual size

No. 1—MONTGOMERY COUNTY, ILLINOIS. Material, deep red ferruginous quartz, mottled with shades of white. Highly polished. Found in a field in 1889, two and one-half miles southwest of Hillsboro. Size 4 7/8 x 2 7/8. Catalogue number 20. Class C specimen. *From the author's collection*

No. 2—SMITH COUNTY, TENNESSEE. Material, grayish tan quartz veined with shades of gray. Size 4 3/4 x 3 inches. This specimen can be classified as a blending form because of the fact that it is not made of ferruginous quartz, which was later adopted for the making of ultimate patterns that are classified as type specimens. Catalogue number 16. Class B specimen. *From the author's collection*

No. 3—OHIO COUNTY, KENTUCKY. Material, appears to be jasper, Indian red color. Found in a field in 1898. Size 4 5/8 x 2 5/8 inches. Class C specimen. *From the author's collection*

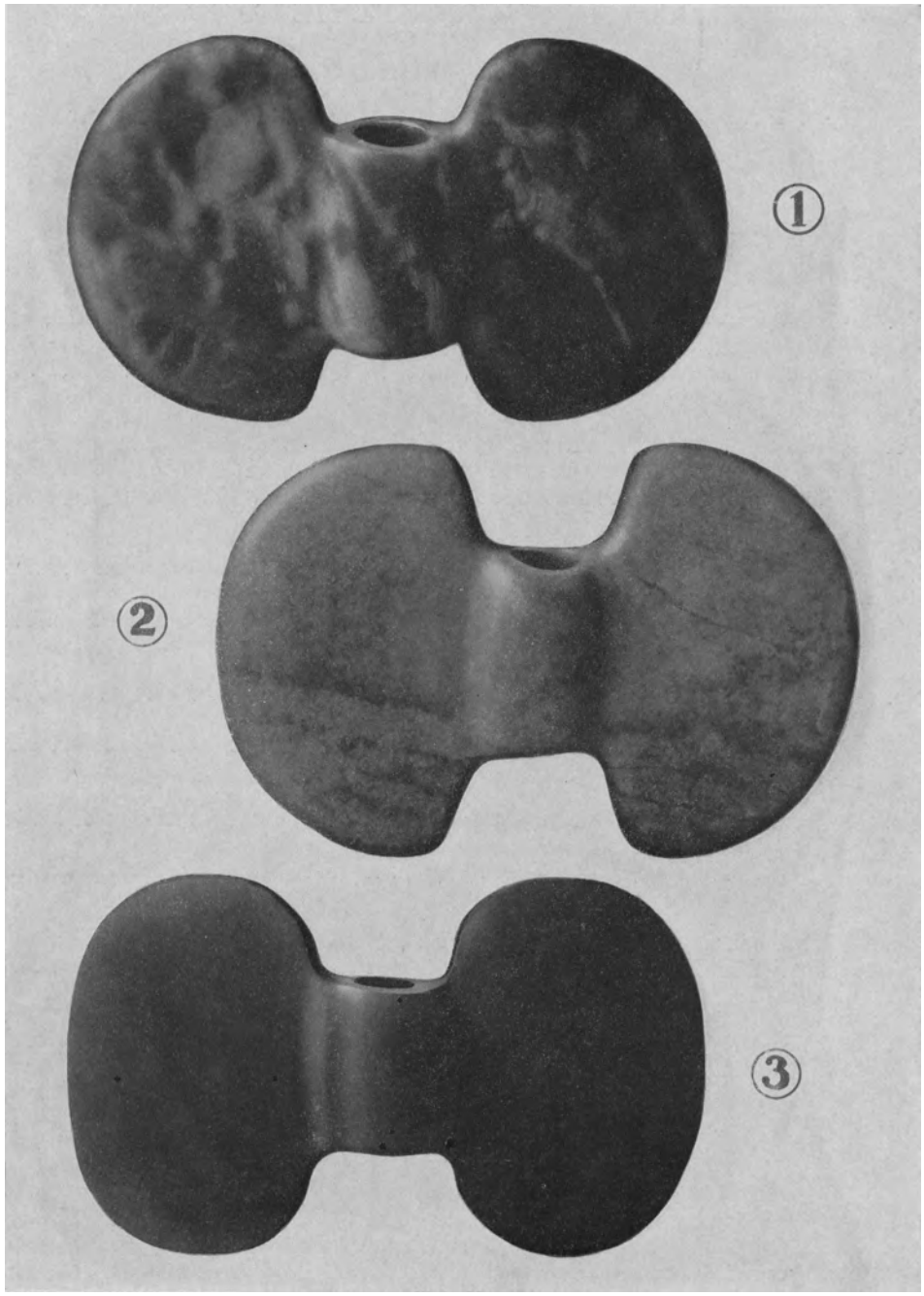


PLATE 189

EXPLANATION OF PLATE 190

QUARTZ BUTTERFLY GROUP

Types No. 16 of Ferruginous Quartz Material from the Middle and Upper Mississippi Valley Area

CLASS C SPECIMEN

Plate 1/2 actual size

No. 1—Locality unknown. Probably Lower Mississippi Valley Area. Material, ferruginous quartz. Neg. No. 24581-A.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—RANDOLPH COUNTY, ARKANSAS. Material, ferruginous quartz. Catalogue number 286550. Neg. No. 24581-G. Case 18. Col. by W. E. Trice. Size 4 1/2 x 2 7/8 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 3—ALLEN COUNTY, OHIO. Material, deep red quartzite. Found near the town of Lima. Formerly in the Goodwin collection.
Dr. Rollin Bunch collection, Muncie, Indiana

No. 4—MISSISSIPPI, County unknown. Material, ferruginous quartz. Neg. No. D-N/756 Plate 2. Size 4 3/4 x 3 inches.
The American Museum of Natural History collection, New York, N. Y.

No. 5—MILWAUKEE COUNTY, WISCONSIN. Material, quartz. Catalogue number A-12624. Size 4 x 3 3/4 inches. No evidence of drilling.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 6—KENTUCKY, County unknown. Material, deep red ferruginous quartz. Catalogue number B-179. Size 5 3/8 x 3 1/2 inches. *F. P. Hills collection, Delaware, Ohio*

No. 7—ST. CLAIR COUNTY, ILLINOIS. Material, light bluish gray translucent quartz. This specimen can be classified as a blending form because of the fact that it is not made of ferruginous quartz, which was later adopted for the making of ultimate patterns that are classified as type specimens. Size 4 x 2 3/4 inches. Class (B) specimen. *E. W. Payne collection, Springfield, Illinois*

No. 8—CRAWFORD COUNTY, MISSOURI. Material, ferruginous quartz, clouded with large areas of white. Although this specimen is not the largest of this type, it is of extraordinary size, and displays superb workmanship. Catalogue number 797. Size 4 x 3 1/8 inches. *F. P. Hills collection, Delaware, Ohio*

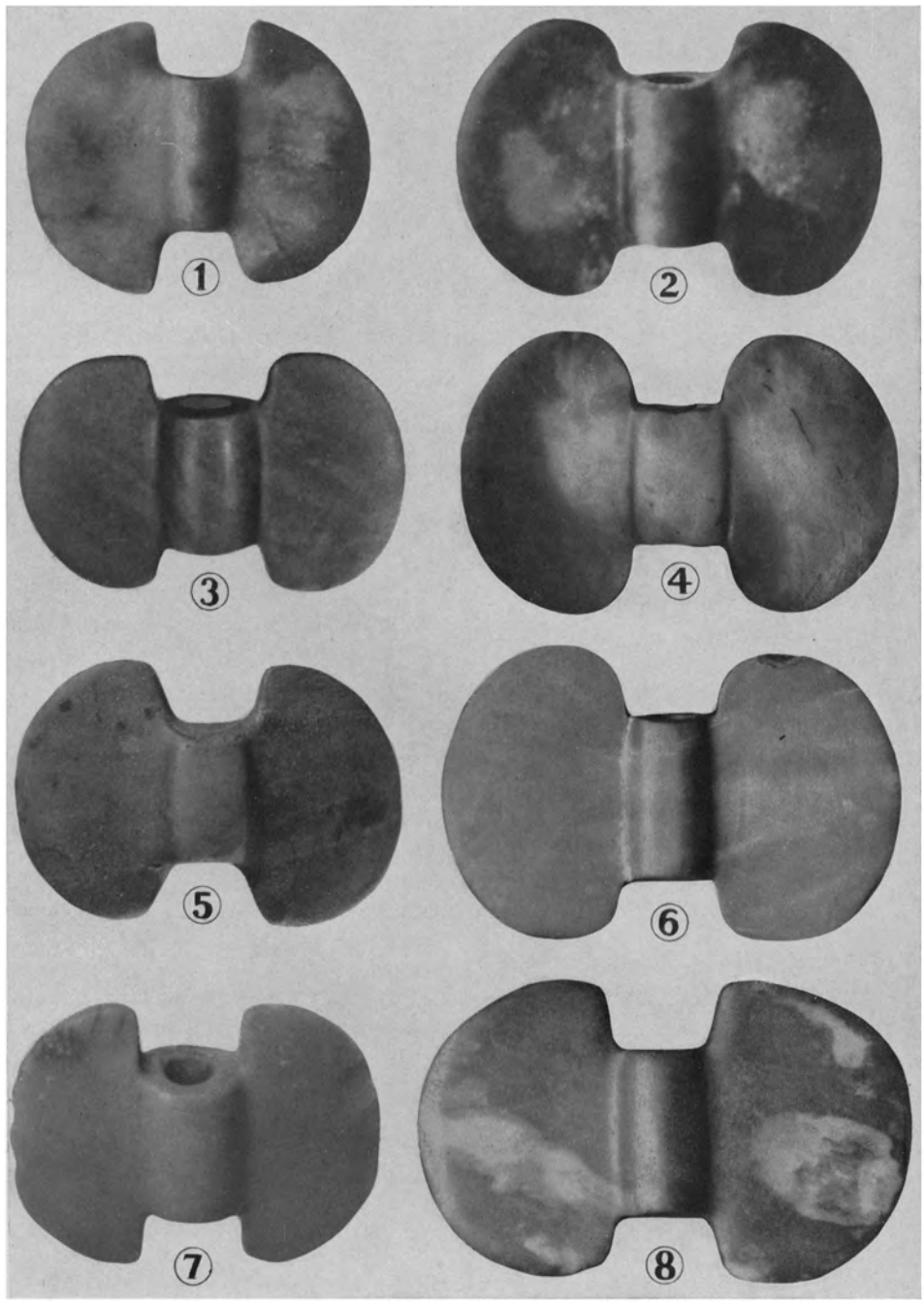


PLATE 190

EXPLANATION OF PLATE 191

QUARTZ BUTTERFLY GROUP

Types No. 16 of Ferruginous Quartz Material from the Upper Mississippi Valley Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—MUSCATINE COUNTY, IOWA. Material, mottled ferruginous quartz. The surface is smooth but not polished. Size 5 5/8 x 3 3/8 inches.
Ben Neusbaum collection, Fairbury, Illinois

No. 2—MUSCATINE COUNTY, IOWA. Material, mottled ferruginous quartz, discolored and marked from age. The surface is pecked quite smooth but not polished. The writer believes that this specimen is the largest Quartz Butterfly banner-stone so far discovered. Size 6 1/2 inches x 4 inches. *Ben Neusbaum collection, Fairbury, Illinois*

No. 3—MUSCATINE COUNTY, IOWA. Material, deep brownish red opaque ferruginous quartz. The Surface is smooth but there still remains the evidence of pecking. Size 5 3/8 x 4 inches. *Ben Neusbaum collection, Fairbury, Illinois*

The three specimens, and the one shown in Plate 193, and also another not illustrated in this volume were discovered by a farmer in a small field. These discoveries covered a period of but a few years. It is very probable that these five objects were made by one individual.

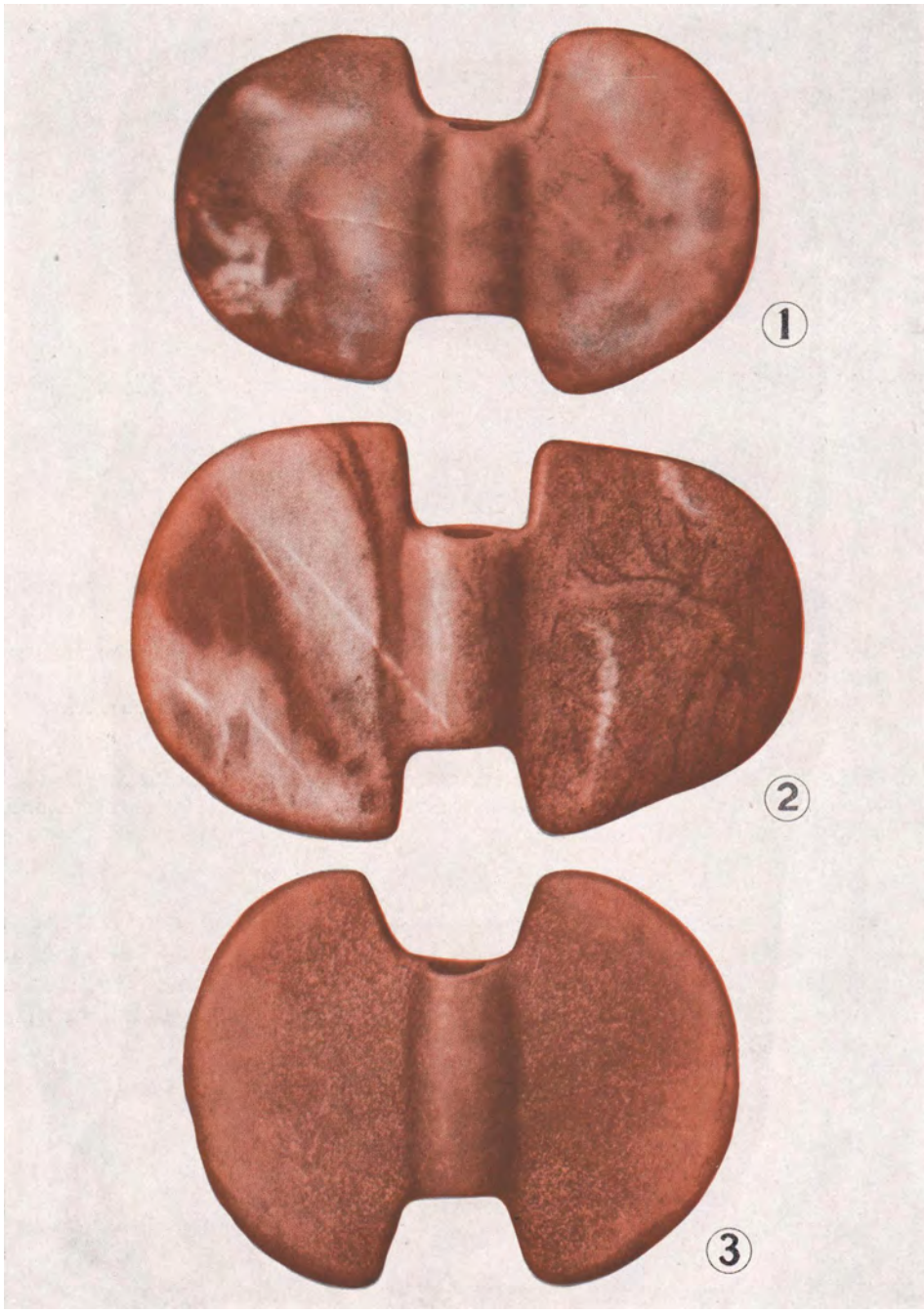


PLATE 191

EXPLANATION OF PLATE 192

QUARTZ BUTTERFLY GROUP

Types No. 16 of Ferruginous Quartz Material from the Lower and Middle Mississippi Valley Areas

CLASS C SPECIMENS

Plate 3/4 actual size

No. 1—MONTGOMERY COUNTY, TENNESSEE. Material, deep red ferruginous quartz. Surface highly polished. Size 5 5/8 x 3 3/4 inches.
E. L. Renno collection, St. Charles, Missouri

No. 2—SABINE PERISH, LOUISIANA. Material, dark red opaque quartz with a lighter clouded area on one wing, surface polished. Found near the town of Many. Catalogue number 776. Size 5 7/8 x 3 5/8 inches. *From the author's collection*

These two specimens are of designs that are characteristic of the Lower Mississippi Valley Area, and can be recognized by the rather abrupt angular corners of each wing at each side of the notches. It is very evident that as the making of these patterns spread farther north, the abrupt angular corners become more and more rounding, until the wing became oval or nearly round in shape.

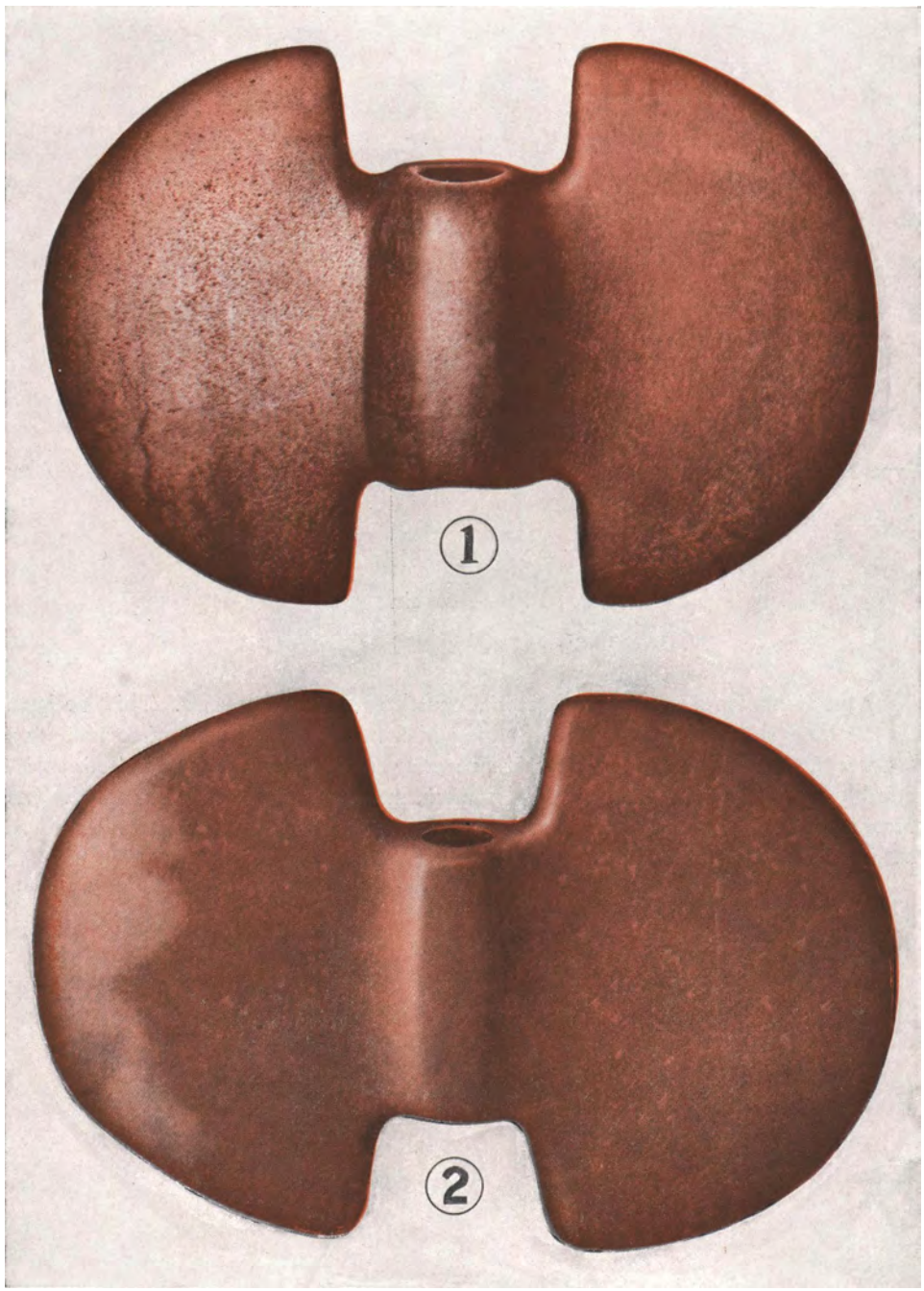


PLATE 192

EXPLANATION OF PLATE 193

QUARTZ BUTTERFLY GROUP

Type No. 16 of Ferruginous Quartz Material from the Upper Mississippi Valley Area

CLASS C SPECIMEN

Plate actual size

MUSCATINE COUNTY, IOWA. Material, mottled translucent quartz. This specimen and the three shown in Plate 191, and also another not illustrated were discovered by a farmer in a small field. These discoveries covered a period of but a few years. This object probably ranks second in size of the largest specimens of this type so far discovered. The corner of one wing was broken off when found, and the picture has been retouched so that it appears to be perfect.

Ben Neusbaum collection, Fairbury, Illinois

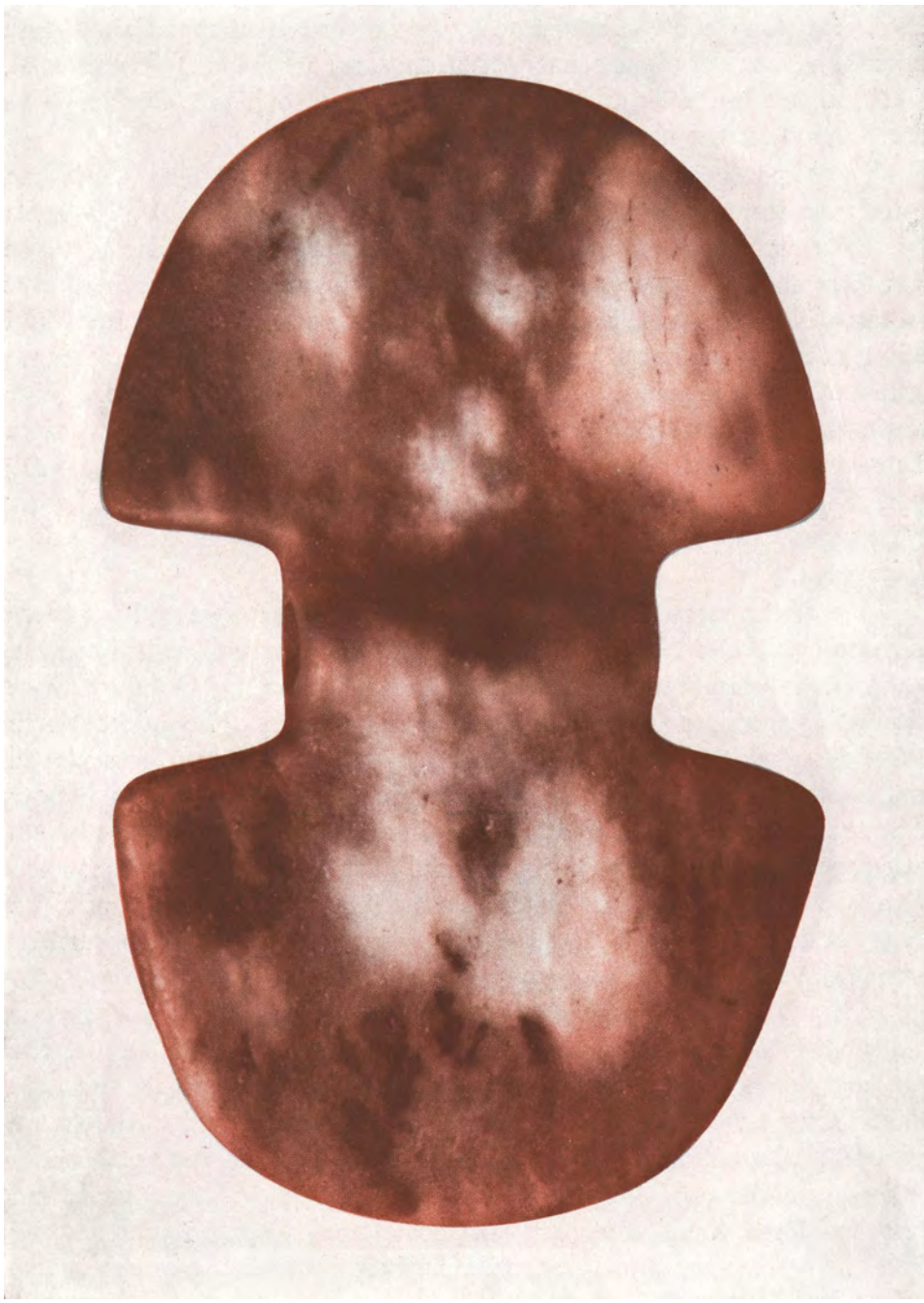


PLATE 193

ever, that this stone was first used in the Lower Mississippi Valley Area because so many of the specimens from this area are made of this material, and also because their designs are usually not so highly developed as those found farther north.

The type specimen from the Lower Mississippi Valley Area can usually be identified from those of the Middle Mississippi Valley Area by the construction of the notches. The notches are angular in shape and form angular corners on the wings at each side of the notches. But as the making of this design spread farther north up the Mississippi River the angular-shaped corners of the wings became more and more rounded until the wings became oval or nearly round in shape. Note the two specimens shown in Plate 192. The one specimen No. 1 from Tennessee is almost identical in shape to the specimen No. 2 from Louisiana. The specimen from Tennessee was probably made in the Lower Mississippi Valley Area and was carried to the locality where it was discovered.

One of the most beautiful type specimens so far observed is shown in Plate 190 under No. 8. This object, made of exceptionally beautiful material, exhibits remarkable workmanship. Plate 191 shows three interesting specimens from Muscatine County, Iowa. The object shown under No. 2 is the largest *Quartz Butterfly* banner-stone so far observed and is probably the largest so far discovered. It is interesting to know that these three objects, and the one shown in Plate 193 and also on title page, and also another not illustrated in this volume were discovered by a farmer in a small field. These discoveries covered a period of but a few years. It is difficult to determine whether or not these specimens were made in the locality where they were found.

It is very probable that these five banner-stones were made by one Indian, because they show the same construction and also because the workmanship appears to be the same. The outside surfaces of these objects were never finished. The maker undoubtedly intended to do more grinding and more polishing. Judging from the fact that the wings show rather abrupt angular shaped corners, one may believe that the Indian who had made these specimens had come from some point down the river. It is also very probable that he had even traveled from the Lower Mississippi Valley Area to the locality where they were discovered.

RECTANGULAR BARRELED GROUP

TYPE No. 17

The origin of this group of banner-stones can be traced to the *Southern Ovate Primary Form No. 4.* By following the evolutionary development of this group, from this simple shaped primary form to the ultimate designs, one can easily note the route of travel which the Indians who had made these objects, had taken. This travel route can be followed from the Primary Area to the Lower Mississippi Valley Area and from there north through the Middle and Upper Mississippi Valley Areas.

The evolution of the design shows that the oval or circular shaped primary forms were transformed into rectangular shapes. The early made blending forms from the Lower Mississippi Valley Area are rectangular in shape with rounding corners. The more highly developed blending forms from this area show that the rounded corners were changed into angular-shaped corners. Usually the dimension of these specimens is greater in width (from blade to blade) than in height (from end to end). Plate 194 shows a number of blending forms from the Lower Mississippi Valley Area.

As the custom of making banner-stones of this design spread farther north up the Mississippi Valley the underdeveloped design was gradually changed into designs which are regarded as types. The majority of these usually show a height greater than their width. Therefore, it is quite easy for one to identify the specimens which can be regarded as highly developed patterns or types from those which can be regarded as blending forms. Plate 198 shows several types from the Middle and Upper Mississippi Valley Areas.

The reason these objects were named *Rectangular Barreled* is as follows: the term *Rectangular* was selected because the ultimate patterns are of this shape. The term *Barreled* was selected because the reinforced area through the middle of the stone for the perforation is barreled,

(*Continued on Page 428*)

EXPLANATION OF PLATE 194

RECTANGULAR BARRELED GROUP

Primary Forms No. 4 and Blending Forms of Various Spotted Granite Materials from the Southern Area and the Lower and Middle Mississippi Valley Areas

CLASS A AND B SPECIMENS

Plate 5/12 actual size

No. 1—GREENVILLE COUNTY, SOUTH CAROLINA. Material, fine grained gray wiry granite, discolored tan from age. Primary form, Class A specimen.
N. E. Carter collection, Elkhorn, Wisconsin

No. 2—ANDERSON COUNTY, SOUTH CAROLINA. Material, black and white spotted granite, discolored a rusty brown from the iron in the ground in which it lay. Hollow reed drilling one-half inch deep. Primary form, Class A specimen.
Sam M. Cathcart collection, Anderson, South Carolina

No. 3—CRAWFORD COUNTY, MISSOURI. Material, black and white, spotted granite. Found in a plowed field near the Merrimac River at Campbells bridge, in Dec. 1934. Class B specimen. *Kyle L. Sly collection, St. Louis, Missouri*

No. 4—FORSYTHE COUNTY, GEORGIA. Material, light grayish tan steatite. Primary form, Class A specimen. *E. W. Payne collection, Springfield, Illinois*

No. 5—LA SALLE COUNTY, ILLINOIS. Material, black and white conglomerate porphyry, highly polished. Formerly in the E. W. Payne collection. Class B specimen.
From the author's collection

No. 6—SCOTT COUNTY, ARKANSAS. Material, gray and white mottled quartzite. Found on the surface near Ross Creek about three miles south of Waldron, in 1925. Hollow reed drilling one-eighth inch deep. Class B specimen.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 7—SANDUSKY COUNTY, OHIO. Material, black and white speckled granite. Class B specimen.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 8—LOUISA COUNTY, IOWA. Material, green and white speckled granite. Found within one mile of the Mississippi River. Hollow reed drilling just started. Class B specimen. *Claude U. Stone collection, Peoria, Illinois*

No. 9—GEORGIA, County unknown. Material, speckled wiry granite. Negative number 784. Catalogue number 4-5153. This specimen is illustrated in *Stone Ornaments of the American Indian* under Fig. 101. Class B specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 10—AUDRAIN COUNTY, MISSOURI. Material, greenish gray and white conglomerate porphyry. Collected by the author. Class B specimen.
B. W. Stephens collection, Quincy, Illinois

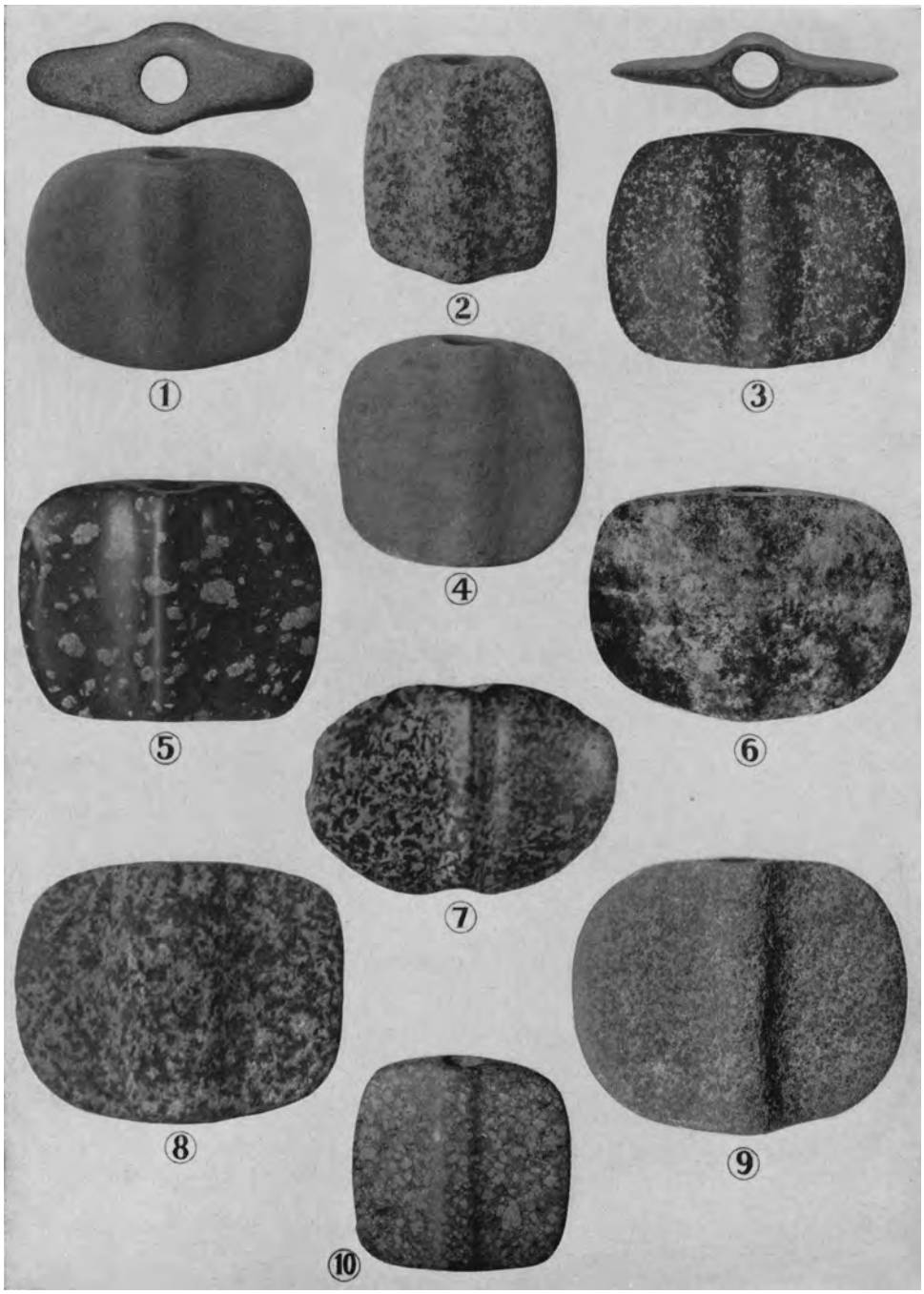


PLATE 194

EXPLANATION OF PLATE 195

RECTANGULAR BARRELED GROUP

Blending Forms of Various Materials from the Lower, Middle and Upper Mississippi Valley Areas

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—HEMPSTEAD COUNTY, ARKANSAS. Material, brown hematite, highly polished. Found on William Temple Place near Boid's Creek, near Shepard, in 1930. Catalogue number Z-27. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 2—GRANT COUNTY, WISCONSIN. Material, black and yellow granite. Found four miles northeast of Boscobel, in Waters Town Twp. This specimen is very interesting because it is an early developed blending form characteristic of those that occur in the Lower Mississippi Valley Area. It is very probable that this specimen was carried from the Lower Mississippi Valley Area to the state of Wisconsin. Milwaukee Public Museum photograph Neg. No. 416464.
Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin

No. 3—WILLIAMSON COUNTY, ILLINOIS. Material, speckled granite, badly weathered and discolored brown from age. Found near Crab Orchard Creek. Perforation absent.
Irvin Peithman collection, Carbondale, Illinois

No. 4—YELL COUNTY, ARKANSAS. Material, dark green speckled granite. Found on the surface near Iron Creek in 1930. No evidence of drilling. Catalogue number Z-28.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 5—WISCONSIN, County unknown. Material, black and white porphyry. Hollow reed drilling 1/8 inch deep. *Philip C. Schupp collection, Chicago, Illinois*

No. 6—CLAY COUNTY, ARKANSAS. Material, fine grained deep red sand stone. Catalogue number 97. Size 5 1/2 x 3 5/8 inches. *From the author's collection.*

No. 7—SALINE COUNTY, ARKANSAS. Material, dark gray finely grained granite. Found near the town of Saline. Hollow reed drilling 1/2 inch deep.
N. E. Carter collection, Elkhorn, Wisconsin

No. 8—MADISON COUNTY, ILLINOIS. Material, black and white wiry granite, highly polished. Collected by the author. *Philip C. Schupp collection, Chicago, Illinois*

No. 9—COOK COUNTY, ILLINOIS. Material, black and white spotted granite, discolored tan from age. Found near the town of Thornston.
Philip C. Schupp collection, Chicago, Illinois

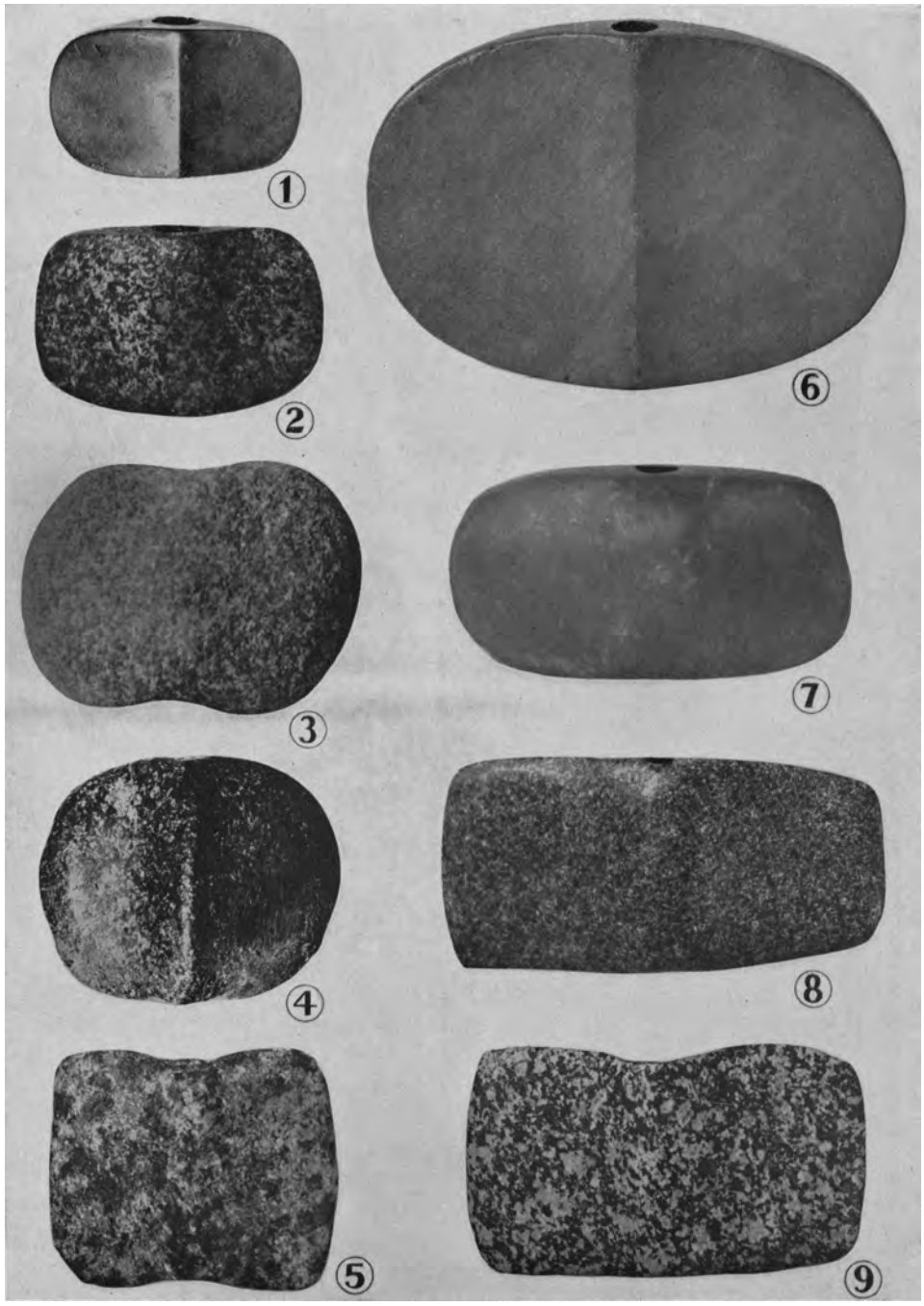


PLATE 195

EXPLANATION OF PLATE 196

RECTANGULAR BARRELED GROUP

Blending Forms and Types No. 17 of Various Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS A, B, AND C SPECIMENS

Plate 1/2 actual size

No. 1—KEOKUK COUNTY, IOWA. Material, black and white striped fine grained sand stone. The light stripes are badly disintegrated. Found by Mr. Raymond Leathers on the side of an eroded hill near North Skunk River in Warren Twp. Catalogue number 6041. Hollow reed drilling 1/2 inch deep. Size 6 x 4 inches. Class B specimen. *Julian C. Spurgeon collection, Ottumwa, Iowa*

No. 2—SAUK COUNTY, WISCONSIN. Material, black and tan speckled granite, badly disintegrated. The lower end of this specimen was apparently broken away by the inserted staff, and it was then repaired by forming the damaged end into a sort of notch, thus giving the appearance of a Butterfly pattern. Formerly in the author's collection. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—PARKE COUNTY, INDIANA. Material, black and white finely speckled granite. Class B specimen. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 4—YELL COUNTY, ARKANSAS. Material, gray and light brown mottled granite. Found on the surface on the Daniel Chertney farm, near Plain View, near the Fourche River in 1929. Catalogue number Z-38. Class B specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 5—TANEY COUNTY, MISSOURI. Material, finely speckled tan granite. Class B specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 6—BUTLER COUNTY, MISSOURI. Material, black and white speckled granite, discolored from age. Found in 1931. Catalogue number 690. Size 3 1/2 x 2 1/2 inches. Class C specimen. *From the author's collection*

No. 7—CLAY COUNTY, ARKANSAS. Material, black and white speckled granite, discolored a rich golden tan from age. Catalogue number 27. Formerly in the author's collection. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 8—HARWARD COUNTY, ARKANSAS. Material, green granite, discolored from age. Found on the surface near Mineral Springs, in 1935. Catalogue number Z-40. Class A specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 9—RED RIVER COUNTY, TEXAS. Material, banded-slate. Found on a camp site near Clarksville. Conical shaped drilling, 5/8 inches deep started from each end. Catalogue number 477-B. Size 13/16 x 1 3/4 inches. Primary form. Class A specimen. *The University of Texas Museum collection, Austin, Texas*

No. 10—LOUISA COUNTY, IOWA. Material, black and white porphyry, discolored tan from age. Size 4 1/4 x 3 1/4 inches. This type specimen is unusually beautiful and well made. Class C specimen. *Claude U. Stone collection, Peoria, Illinois*

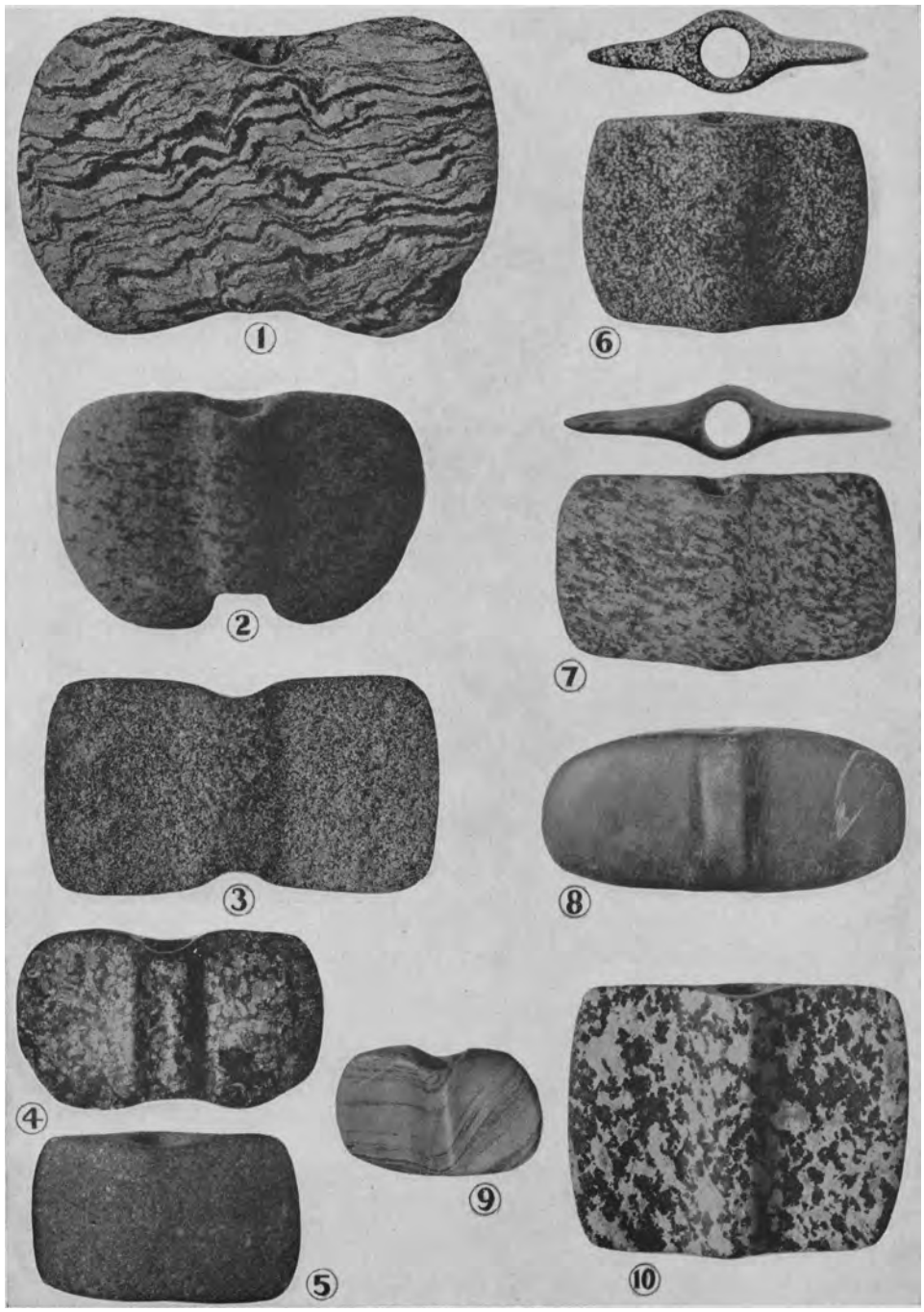


PLATE 196

EXPLANATION OF PLATE 197

RECTANGULAR BARRELED GROUP

Types No. 17 of Various Granite and Quartz Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 5/11 actual size

No. 1—Cole County, Missouri. Material, hard compact mottled sand stone, discolored from age. Catalogue number 8819. *E. W. Payne, collection, Springfield, Illinois*

No. 2—St. Clair County, Illinois Material, deep red quartzite.
C. C. Benedict collection, Decatur, Illinois

No. 3—County unknown, probably Illinois. Material, deep red quartzite, highly polished.
Indiana Historical Museum collection, Indianapolis, Indiana

No. 4—Pike County, Missouri. Material, dark green diorite.
N. E. Carter collection, Elkhorn, Wisconsin

No. 5—Knox County, Ohio. Material, greenish gray porphyry with spots of tan. Collected by the author. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 6—Illinois, County unknown. Material, brown and red ferruginous quartz. Size 3 7/8 x 2 3/4 inches. *Philip C. Schupp collection, Chicago, Illinois*

No. 7—Macon County, Illinois. Material, pink quartzite. Found in Mt. Zion Twp. This specimen is pecked into shape, and shows no evidence of drilling.
C. C. Benedict collection, Decatur, Illinois

No. 8—Locality unknown. Material, probably mottled granite. Case 18. Neg. No. 24581-A-61899.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 9—Illinois, County unknown. Material, greenish gray and white conglomerate porphyry. Milwaukee Public Museum Photograph Neg. No. 41402.
E. W. Payne collection, Springfield, Illinois

No. 10—Clay County, Missouri. Material, dark green granite, speckled with spots of a softer material which has disintegrated. Formerly in the E. W. Payne collection. Catalogue number 8858. *C. C. Benedict collection, Decatur, Illinois*

No. 11—Kankakee County, Illinois. Material, deep red quartzite. Found near the town of Momence. *E. W. Payne collection, Springfield, Illinois*

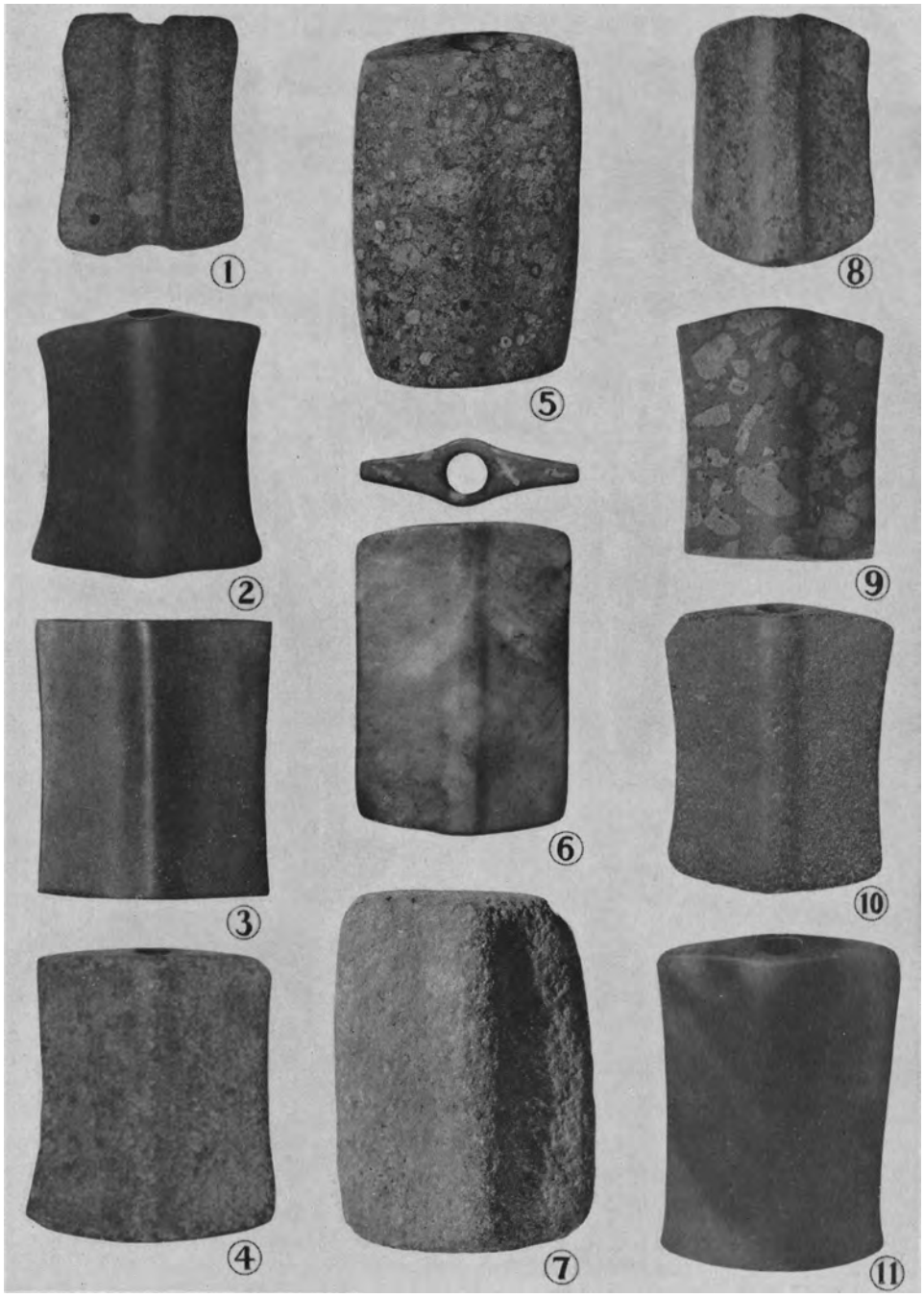


PLATE 197

EXPLANATION OF PLATE 198

RECTANGULAR BARRELED GROUP

Types No. 17 of Spotted and Mottled Granite and Quartz Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—JERSEY COUNTY, ILLINOIS. Material, green and white spotted granite. No evidence of drilling. *B. W. Stephens collection, Quincy, Illinois*

No. 2—CRAWFORD COUNTY, MISSOURI. Material, gray and white mottled quartzite with shades of brown probably caused from age. Found one fourth mile north of Route 66, near Burbon. *L. A. Goessling collection, Webster Groves, Missouri*

No. 3—MACOUPIN COUNTY, ILLINOIS. Material, pink quartzite veined with dark red. Formerly in Dr. A. W. Pendergast collection.
Con Foster Museum collection, Traverse City, Michigan

No. 4—HEMPSTEAD COUNTY, ARKANSAS. Material, greenish gray porphyry. Found on the surface near the town of Washington. Catalogue number Z-1.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 5—SCOTT COUNTY, ARKANSAS. Material, deep red quartzite, highly polished. Found in a Creek near Fourche River, in 1927 on John Jameson place. Catalogue number Z-4.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 6—SCOTT COUNTY, ILLINOIS. Material, green and white spotted porphyry. Found near the town of Winchester. *E. W. Payne collection, Springfield, Illinois*

No. 7—WILL COUNTY, ILLINOIS. Material, green and white spotted porphyry. One side of this specimen has a heavy dark brown coat of patina, the other side is aged to tan. Catalogue number 61. Size 5 x 2 3/4 inches. An end view is shown above.
From the author's collection

No. 8—FOND DU LAC COUNTY, WISCONSIN. Material, dark finely grained granite with small black spots, discolored from age to a rich brown. This specimen is illustrated in *Stone Ornaments of the American Indian* by Warren K. Moorehead in Figure 100. Size 4 1/4 x 3 3/8 inches. *From the author's collection*

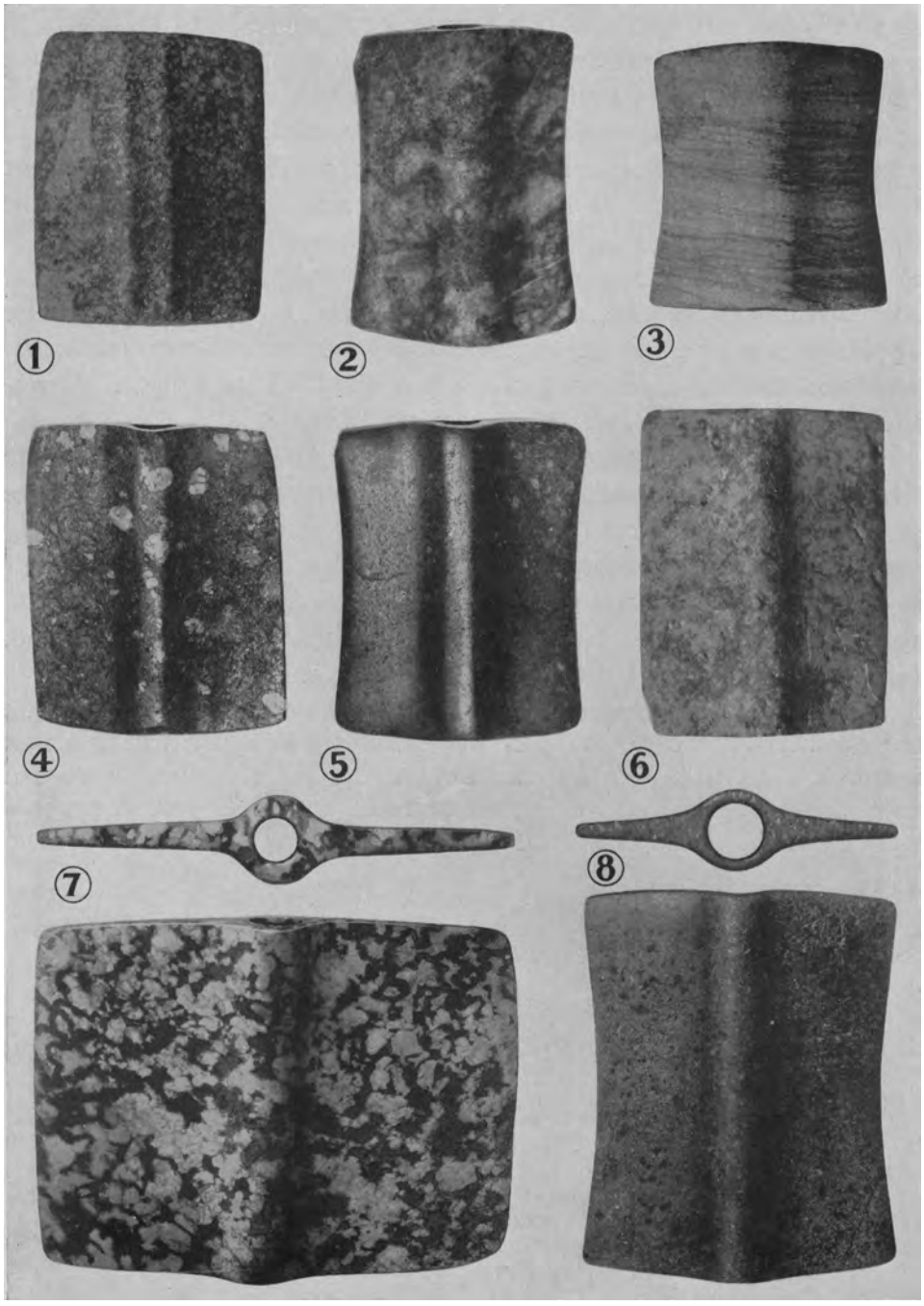


PLATE 198

similar in shape to that of a rifle barrel. From the sides of this barreled area the two wings protrude. Rarer variations are those which have ridged reinforced areas, as illustrated in Plate 195 under Nos. 1 and 6.

The blending forms and also the type specimens are usually made of speckled or spotted granite materials. Therefore, it is very obvious that this rock was adopted to signify some ceremonial meaning during the time when the underdeveloped patterns were made.

Considerable information has been given concerning these particular banner-stones in the chapter *Adoption of Special Materials for Particular Types*, on page 186. It has been mentioned that various quartz materials were also used for the making of many of the ultimate designs. Nevertheless, those made of spotted granites predominate.

An interesting specimen is shown in Plate 197 under No. 6. Note that this object is made of ferruginous quartz, and is the only one of its kind so far observed made of this material. An extremely highly specialized pattern is shown on Plate 198 under No. 7. Note that this object is made of beautiful spotted porphyry material, and shows remarkable workmanship. Another interesting type is shown under No. 8. Note that the side edges are slightly concave in shape.

The pen-and-ink cross-sectional drawings shown in Plate 199 illustrate the evolutionary development of the differently designed patterns that comprise the *Rectangular Barreled Group*. By these drawings, one can note that when the design became more highly developed, the wings were made thinner in construction.

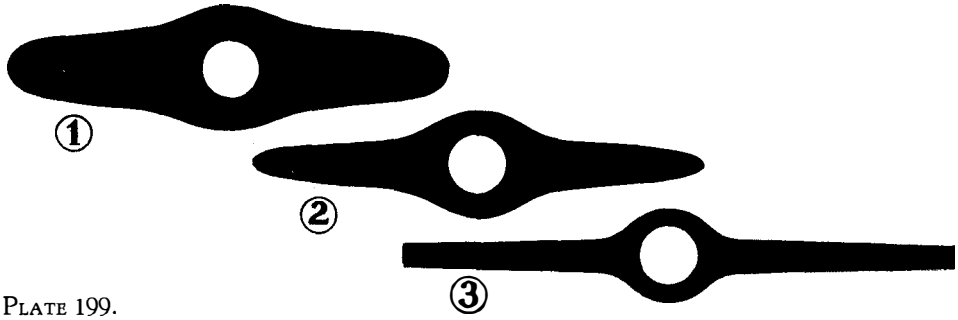


PLATE 199.

Cross-sectional drawing of the patterns of the Rectangular Barreled Group, arranged in a sequence to illustrate their construction and evolution of design.

No. 1—Cross-sectional construction of the primary forms.

No. 2—Cross-sectional construction of the blending forms.

No. 3—Cross-sectional construction of the type specimens.

WISCONSIN WINGED GROUP

The writer had considerable difficulty during the arranging of the *Banner-stone Tree of Evolution* and in deciding which of the early made and simply designed forms were the origin of the patterns which comprise this group. Finally, he became convinced that the rectangular shaped forms from the Primary Area were responsible for the development of the beautifully designed ultimate designs of this group.

These early made forms are rectangular in shape and have a raised and flattened reinforced area through the middle, similar to the reinforced area on the type specimens of this group. These objects have been classified as the *Southern Rectangular Primary Form, No. 5.*

This particular primary form appears to be rather highly developed For this reason it was difficult to decide whether or not this pattern should be regarded as a primary form which was the origin of this group. It was discovered that this is the only early made form which has lines and planes similar to those more highly developed.

Therefore, like other groups of banner-stones the evolution of this group can be traced back to the Primary Area. By the scattered specimens one can follow the travel route which the Indians who had made the banner-stones of this group had taken. This route is similar to others which were taken in a westerly direction from the Primary Area to the Lower Mississippi Valley Area.

According to the *Table* which lists the twenty-four groups of banner-stones on page 126, one can note that this group is composed of two differently designed classified types. The one type is the *Wisconsin Winged, Type No. 18*, the other type is the *Undrilled Wisconsin Winged (Fetish), Type No. 19.* This article will describe briefly and separately each of these two ultimate designs.

Following the articles are shown a series of plates that illustrate a large number of blending forms, and also many of the type specimens of this group. The articles are given as follows:

WISCONSIN WINGED
TYPE No. 18

Many years ago these peculiarly yet beautifully designed banner-stones were referred to as winged, butterfly, bow-ties, double-bitted axe, and many other names. The most commonly used term by the collectors today is that which the writer has adopted for the classification of these objects. This term is *Wisconsin Winged.*

The primary forms and many of the blending forms were made of miscellaneous materials including steatite of various shades, limonite, and finely grained granites, all of which are quite unattractive. It seems very apparent that during the time when the earlier designed specimens were made, these unattractive materials possessed no ceremonial significance whatsoever. A number of these objects are shown in Plate 201.

The type specimens occur rather abundantly throughout the Middle and Upper Mississippi Valley Areas. One of the most interesting features about these objects is the fact they are made of no other material than beautifully spotted granite and porphyry materials. This fact proves beyond a doubt that these materials were carefully selected for a definite ceremonial meaning, thus adding greatly to their significance.

One of the most beautiful type specimens so far observed is shown in Plate 204, under No. 4. This object is made of exceptionally beautiful porphyry and shows remarkable workmanship. Presumably it was made during the same cultural manifestation which had presented the two banner-stones that are described in the chapter, *Banner-stones from Red Paint Burials found near the Illinois River.* See Plate 101, page 210.

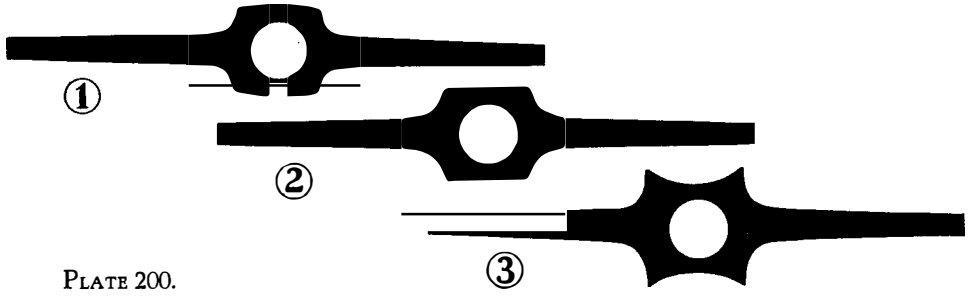


PLATE 200.
Cross-sectional drawing showing variations of the ultimate Wisconsin Winged patterns.
No. 1—The planes of the reinforced area are slightly convex.
No. 2—The planes of this variation are slightly concave.
No. 3—The planes of this pattern were designed in the later phase and are deeply concave.

UNDRILLED WISCONSIN WINGED (FETISH)

TYPE No. 19

Apparently these peculiarly designed objects have never before been described or illustrated in any publication. There are several reasons why these specimens have been classified as banner-stones, regardless that they have no perforations. These reasons are given as follows:

First, these objects occur within the area in which the majority of the ultimate *Wisconsin Winged* patterns occur. Therefore, it is very obvious that the design of these undrilled specimens was copied from those which were drilled. Thus a very close relationship between these two designs exists.

Second, it is also very obvious that because these objects are made of spotted granite and porphyry, the same materials used for the making of the drilled *Wisconsin Winged* patterns, indicates a close relationship between the two designs. It is very probable that these materials likewise had signified the same ceremonial or spiritual meaning which was associated with the patterns which have perforations.

Third, the mere fact that these objects have no perforation is no reason why they can not be classified as banner-stones. The *Undrilled Notched Butterfly, Type No. 26*, which occurs within the Heart Area is regarded as a banner-stone. These objects were unmistakably designed from the *Double Notched Butterfly, Type No. 25*, which does have perforations. Therefore, if undrilled patterns were made as copies from one type there is no reason why other undrilled patterns should not have been made from another type.

Fourth, there might be some who believe that these objects are too small and appear too insignificant to be classified as banner-stones. This question of doubt can easily be dispelled. The name banner-stone was established many years ago when it was believed that these stones were placed only upon the ends of staffs. At this time this term is in reality rather inappropriate to designate the use to which these symbols were put. Many of the so-called banner-stones of various designs were made unusually small; furthermore, many were undoubtedly worn and were never placed on the ends of staffs. There is no doubting that the *Undrilled Wisconsin Winged (Fetish)* patterns were worn ornamentally or fastened

(Continued on Page 448)

EXPLANATION OF PLATE 201

WISCONSIN WINGED GROUP

Primary Forms No. 5 and Blending Forms of Various Materials from the Southern and Lower and Middle Mississippi Valley Areas

CLASS A AND B SPECIMENS

Plate 1/2 actual size

No. 1—ALABAMA, County unknown. Material, diorite, surface polished. Size 2 5/8 x 2 3/8 inches. Primary form. Class A specimen.
Alabama Museum of Natural History collection, University, Alabama

No. 2—VIGO COUNTY, INDIANA. Material, finely grained gray granite, disintegrated and discolored from age. It is very probable that this specimen was carried from the Primary Area to the locality in which it was found. Size 2 5/8 x 2 1/8 inches. Primary form. Class A specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 3—JERSEY COUNTY, ILLINOIS. Material, red hematite, discolored from age. Note the large piece of stone broken away at one end apparently by the inserted staff. Size 3 1/8 x 2 1/4 inches. Class A specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 4—NEWBURY COUNTY, SOUTH CAROLINA. Material, dark gray wiry granite, weathered and discolored from age. This specimen can be classified as a blending form because of the fact both ends are slightly concave. This is the largest banner-stone the writer has observed from the Southern Area. Size 6 1/4 x 4 3/8 inches. Class B specimen.
From the author's collection

No. 5—Locality unknown (probably the Primary Area). Material, data unobtained. Neg. No. 24581-D. Size 3 1/4 x 2 1/2 inches. Primary form. Class A specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 6—ALABAMA, County unknown. Material, mica-schist, surface fairly polished. Size 4 x 2 7/8 inches. Primary form. Class A specimen.
Alabama Museum of Natural History collection, University, Alabama

No. 7—YELL COUNTY, ARKANSAS. Material, gray wiry granite, discolored from age. This specimen is rather unusual because of its size, and the two encised lines on the raised area in the middle of the stone. Size 1 3/4 x 1 1/16 inches. Primary form. Class A specimen. *From the author's collection*

No. 8—AIKEN COUNTY, SOUTH CAROLINA. Material, light gray steatite, disintegrated and covered with a rusty brown iron deposit from age. Size 3 1/4 x 2 1/2 inches. Primary form. Class A specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 9—NORTH HAMPTON COUNTY, PENNSYLVANIA. Material, gray steatite. Because of the fact this specimen was found in the state of Pennsylvania, one may believe that it is nothing more than a pattern made in that locality by some Indian to suit his particular fancy. Therefore, it would have no bearing upon the development of this group. It can, however, be classified to this group because of the fact its lines and planes are so similar to the under developed patterns, or it can be classified as a Freak.
W. C. Fuellhart collection, Tidioute, Pennsylvania

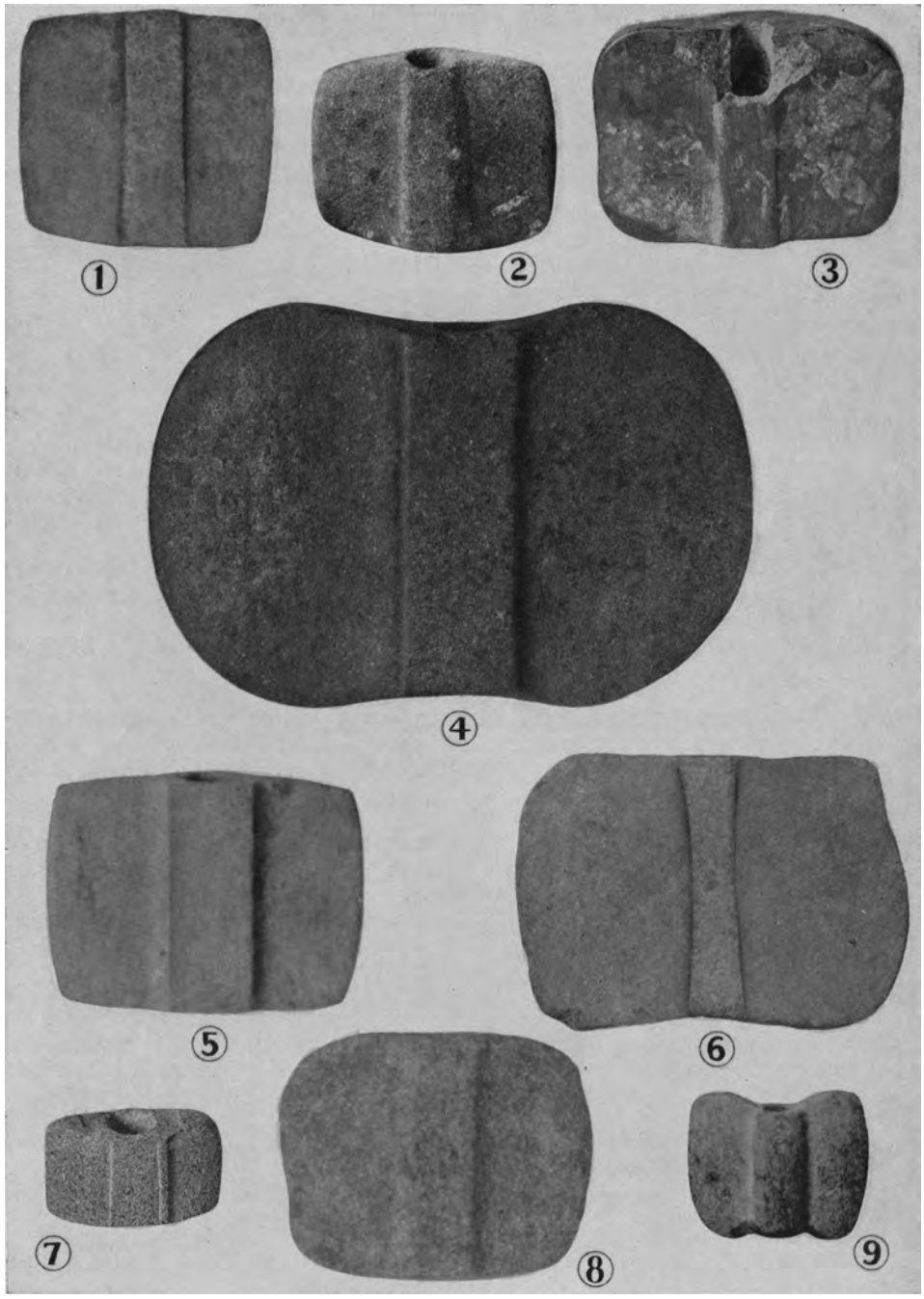


PLATE 201

EXPLANATION OF PLATE 202

WISCONSIN WINGED GROUP

Types No. 18 of Various Spotted Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—MILWAUKEE COUNTY, WISCONSIN. Material, black and tan spotted granite, discolored brown from age. Found by Fred Kohloff on his farm in Township of Wanwatosa. This is the same specimen shown in Plate 203 and No. 10. An end view is shown above. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 2—ST. CHARLES COUNTY, MISSOURI. Material, black and yellow mottled granite highly polished. Note the groove or flute on the one side of the reinforced area for the perforation. An end view is shown above.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 3—KEOKUK COUNTY, IOWA. Material, green and yellow speckled granite, discolored from age. The wings of this specimen are thick, and show no evidence of drilling. *Ben Neusbaum collection, Fairbury, Illinois*

No. 4—GREENE COUNTY, MISSOURI. Material, conglomerate porphyry, dark green color with large light green spots. Hollow reed drilling 1/2 inch deep, showing protruding core. Formerly in the E. W. Payne collection.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—CALHOUN COUNTY, ILLINOIS. Material, green and white spotted granite. This specimen was pecked into shape, and polished, the wings are thick and there is no evidence of drilling the perforation. Size 6 1/4 x 4 3/8 inches. Formerly in the E. W. Payne collection. *From the author's collection*

No. 6—ST. LOUIS COUNTY, MISSOURI. Material, gray, green, and white spotted porphyry. Size 2 3/4 x 2 inches. Formerly in the author's collection. Catalogue number 30.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 7—LIVINGSTON COUNTY, ILLINOIS. Material, black and white spotted granite. Size 3 x 1 3/4 inches. *B. W. Stephens collection, Quincy, Illinois*

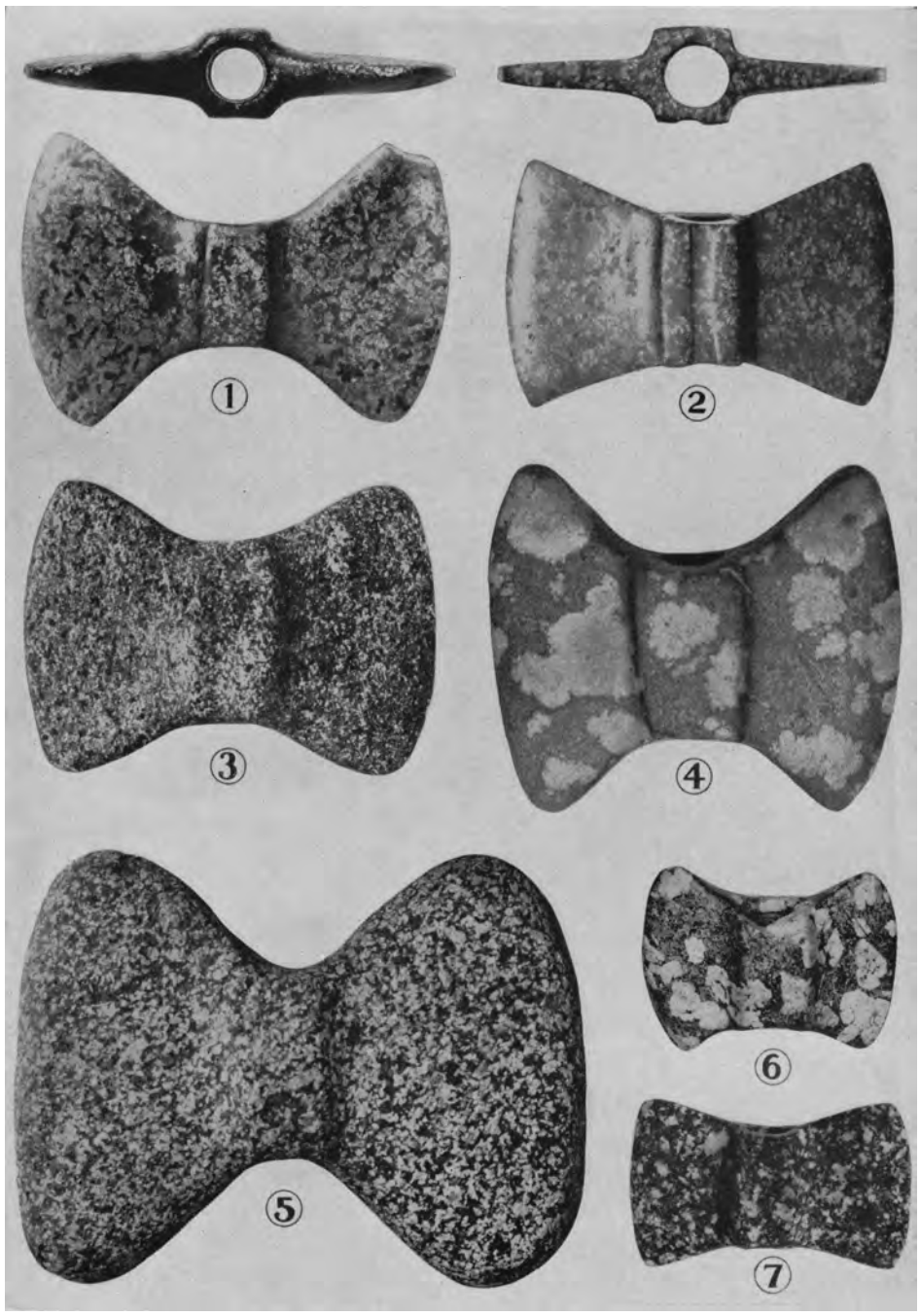


PLATE 202

EXPLANATION OF PLATE 203

WISCONSIN WINGED GROUP

Types No. 18 of Various Spotted Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—OCONTO COUNTY, WISCONSIN. Material, black and yellow speckled and striped granite. Found about five miles north of Underhill, in Underhill Twp., in the fall of 1918. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 2—JACKSON COUNTY, WISCONSIN. Material, black and yellow porphyry. Found two miles northwest of Black River Falls, near Black River. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 3—LINCOLN COUNTY, MISSOURI. Material, black and white spotted granite, discolored from age. Formerly in the E. W. Payne collection. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 4—RACINE COUNTY, WISCONSIN. Material, dark green porphyry. Found in Norway Twp. in 1884. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 5—SALINE COUNTY, MISSOURI. Material, finely speckled gray granite. *B. W. Stephens collection, Quincy, Illinois*

No. 6—PORTAGE COUNTY, WISCONSIN. Material, dark green porphyry with large white spots. Found by Andrew Brekle while plowing near the town of Rosholt. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 7—MILWAUKEE COUNTY, WISCONSIN. Material, black and white porphyry. Found in 1878 in Milwaukee Twp. With this specimen was found a pottery effigy head of some animal (probably wolf) and a beautiful banded-slate handle pipe, which is now in the Milwaukee Public Museum collection. This is the same banner-stone that is illustrated in *Stone Ornaments of the American Indians* under Fig. 102. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 8—WASHINGTON COUNTY, WISCONSIN. Material, conglomerate porphyry, dark green color with large white spots. Drilling just started. Formerly owned by the author. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 9—LINCOLN COUNTY, MISSOURI. Material, gray, black and redish brown mottled granite. This specimen was pumped up from the bottom of the Mississippi River at the dam and lock project No. 25 on December 1, 1936. *Dr. P. F. Titterington Collection, St. Louis, Missouri*

No. 10—MILWAUKEE COUNTY, WISCONSIN. Material, black and tan spotted granite, discolored brown from age, highly polished. Found in Wanwatosa Twp. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

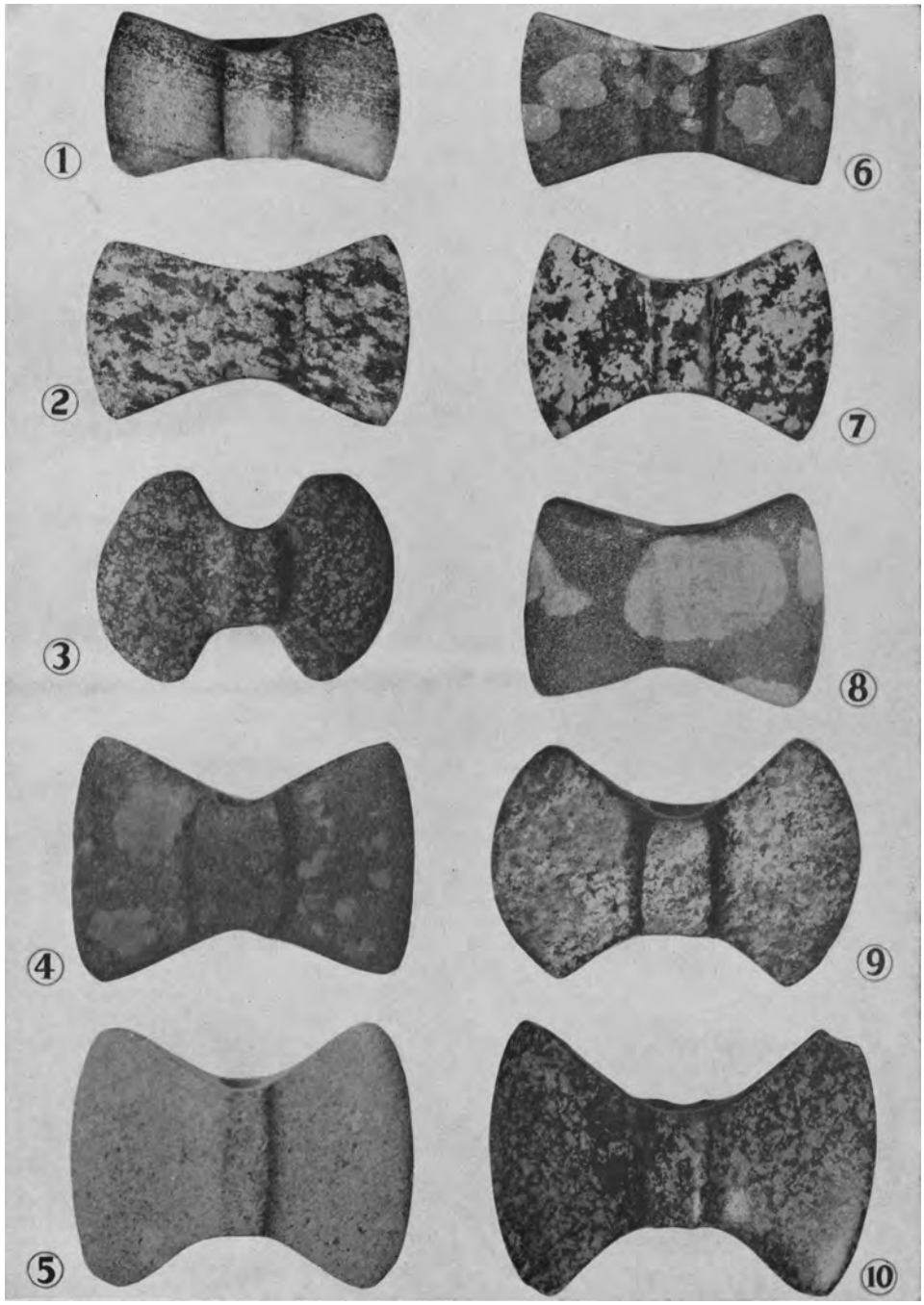


PLATE 203

EXPLANATION OF 204

WISCONSIN WINGED GROUP

Blending Forms and Types No. 18 of Spotted Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS B AND C SPECIMENS

Plate 1/2 actual size

No. 1—KANE COUNTY, ILLINOIS. Material, finely grained green granite. Size 2 3/8 x 2 in. Class C specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 2—COLUMBIA COUNTY, GEORGIA. Material, gray steatite, covered with a rusty iron deposit. Hollow-reed drilling 1/4 inch deep. Although this specimen appears to be similar in shape to the Wisconsin Winged types, it is classed as a blending form because of the fact that it was found in Georgia and is not made of spotted granite. Size 3 5/8 x 2 3/4 inches. Class B specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—PERRY COUNTY, ILLINOIS. Material, grayish white, black, and red mottled granite. Found on a camp site on Beaucoup Creek, near Pinckneyville in May, 1931 by Wayne Gay's 9 year old son Charles. Size 3 1/4 x 2 inches. Hollow reed drilling. 7/16 inch deep. *Charles N. Gay collection, Pinckneyville, Illinois*

No. 4—LA SALLE COUNTY, ILLINOIS. Material, gray porphyry with large white spots, highly polished. Size 4 1/2 x 3 3/4 inches. Formerly in the E. W. Payne collection. The material from which this specimen is made is exceptionally beautiful, and the workmanship is the finest the writer has seen on any banner-stone of this type.
E. L. Renno collection, St. Charles, Missouri

No. 5—VAN BUREN COUNTY, IOWA. Material, black and white spotted granite, surface polished. Hollow-reed drilling, 1/2 inch deep. Formerly in the E. W Payne collection. Class C specimen. *C. C. Benedict collection, Decatur, Illinois*

No. 6—CALHOUN COUNTY, ILLINOIS. Material, black and white spotted granite, surface highly polished. Size 4 1/4 x 3 3/8 inches. Class C specimen.
E. L. Renno collection, St. Charles, Missouri

No. 7—WAPELLO COUNTY, IOWA. Material, porphyry. Size 4 3/4 x 3 3/8 inches. Neg. No. 24581-G 26977 Case 17 G. A. Madison. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 8—FRANKLIN COUNTY, MISSOURI. Material, black and white speckled granite, discolored tan from age. Hollow-reed drilling just started, otherwise finished. Size 4 1/4 x 3 1/4 inches. Formerly in the E. W. Payne collection. Class C specimen.
From the author's collection

No. 9—IROQUOIS COUNTY, ILLINOIS. Material, brown and white finely speckled granite. Drilling just started. *Donald O. Boudeman collection, Kalamazoo, Michigan*

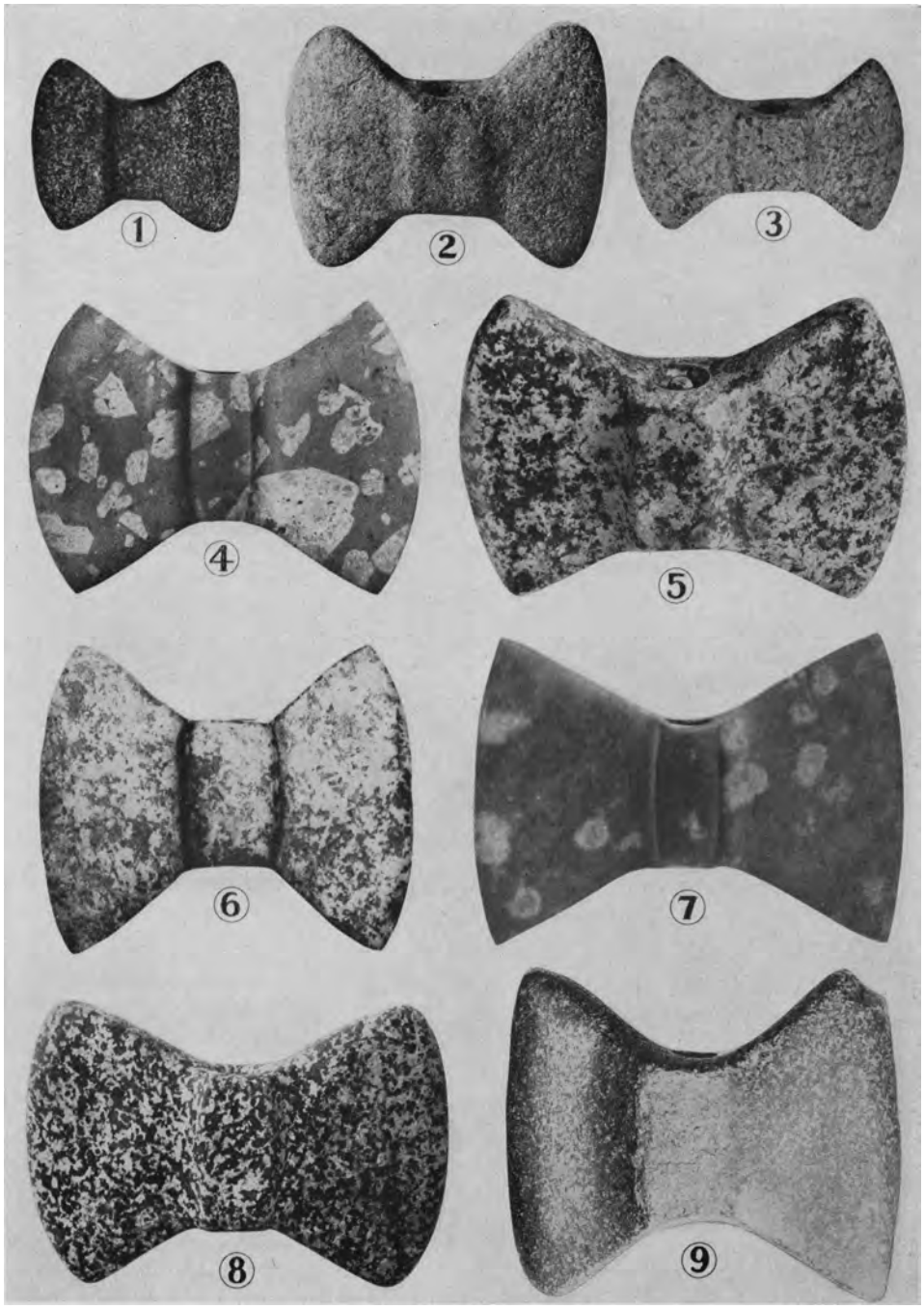


PLATE 204

EXPLANATION OF PLATE 205

WISCONSIN WINGED GROUP

Types No. 18 of Various Spotted Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—WAUKESHA COUNTY, WISCONSIN. Material, green and white porphyry. Hollow reed drilling just started. Found in 1914. Catalogue number 669. Collected by the author. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 2—ADAMS COUNTY, ILLINOIS. Material, black and yellow spotted granite, highly polished. Found on the north side of Quincy, Illinois during the laying of the tracks for the C. B. & Q. Railroad from Quincy to Chicago. Catalogue number 57. *From the author's collection*

No. 3—ST. CHARLES COUNTY, MISSOURI. Material, black and white spotted granite, badly disintegrated. *E. L. Renno collection, St. Charles, Missouri*

No. 4—SOUTHERN WISCONSIN, County unknown. Material, black and white spotted granite, discolored tan from age. *G. I. Groves collection, Chicago, Illinois*

No. 5—DODGE COUNTY, WISCONSIN. Material, black and white spotted granite, discolored a light tan from age. *From the author's collection*

No. 6—MARION COUNTY, MISSOURI. Material, dark green and white porphyry discolored from age. Found while digging gravel in a gravel pit in 1929. Collected by the author. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 7—PIKE COUNTY, MISSOURI. Material, black and tan spotted granite, highly polished. Hollow reed drilling just started. Note that the reinforced area for the perforation is deeply concaved on each face. Catalogue number 56. *From the author's collection*

No. 8—JEFFERSON COUNTY, MISSOURI. Material, black and white spotted granite, highly polished. Found in a field near the bank of Big River in May, 1932. Collected by the author. *Dr. P. F. Titterington collection, St. Louis, Missouri*

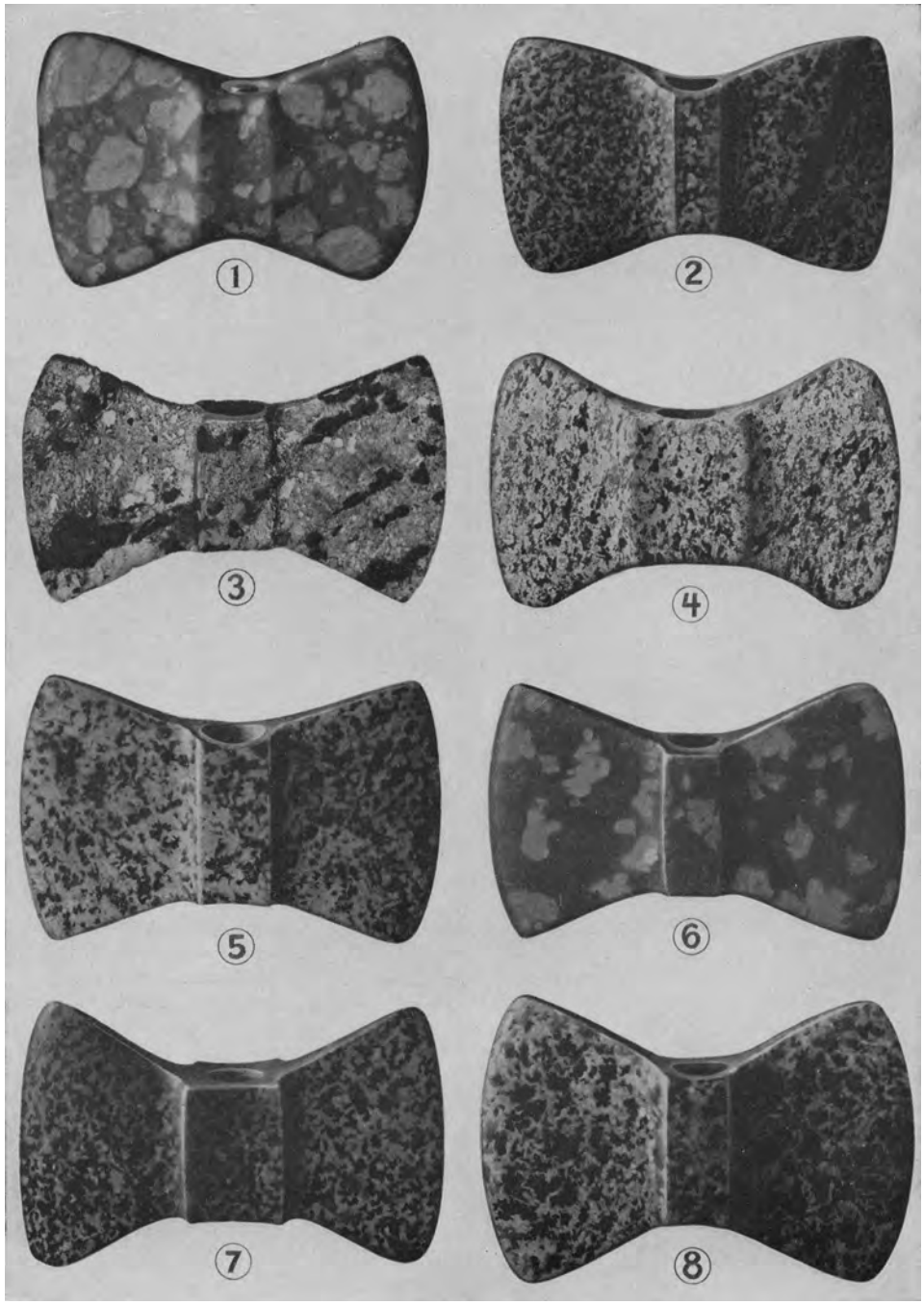


PLATE 205

EXPLANATION OF PLATE 206

WISCONSIN WINGED GROUP

Types No. 18 of Various Spotted Granite Materials from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—GREEN COUNTY, ILLINOIS. Material, beautifully spotted and mottled granite, probably a rare form of conglomerate porpyry. This specimen shows extraordinary workmanship. Formerly in the E. W. Payne collection. Size 5 x 3 3/4 inches.
Dr. Rollin Bunch collection, Muncie, Indiana

No. 2—DODGE COUNTY, WISCONSIN. Material, greenish gray and white porpyry. Hollow reed drilling just started. Found near Kekoskes. Size 5 x 3 3/4 inches. Collected by the author. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—WINNEBAGO COUNTY, ILLINOIS. Material, black and white spotted granite. Hollow reed drilling just started. This specimen is well shaped and quite smooth, but not highly polished. Found near Rockford. Size 5 1/4 x 4 1/4 inches.
Dr. A. W. Pendergast collection, Fairbury, Illinois

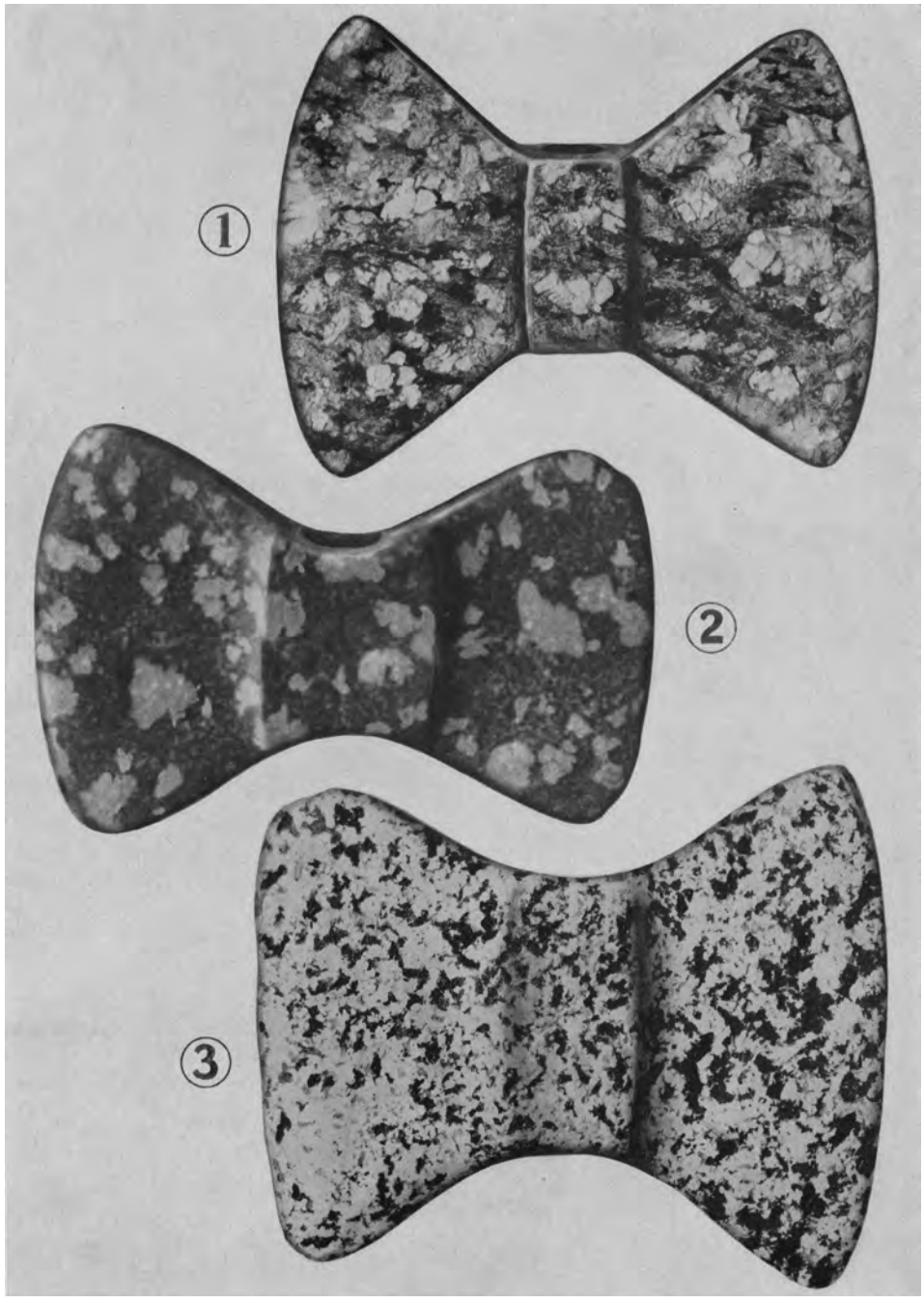


PLATE 206

EXPLANATION OF PLATE 207

WISCONSIN WINGED GROUP

Types No. 18 of Various Spotted Granite Materials from the Middle and Upper Mississippi Valley Areas

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—CASS COUNTY, ILLINOIS. Material, finely speckeled gray granite, discolored brown from age. No evidence of drilling. *From the author's collection*

No. 2—CALDWELL COUNTY, MISSOURI. Material, mottled granite. Catalogue number A4269. Photograph by Milwaukee Public Museum, Neg. No. 421277.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 3—DANE COUNTY, WISCONSIN. Material, porphyry. Found at Pleasant Branch, northwest shore of Lake Medota. Catalogue number A9011. Photograph by Milwaukee Public Museum, Neg. No. 421280.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 4—OCONTO COUNTY, WISCONSIN. Material, mottled and striped granite. Found seven miles Northwest of the town of Oconto. Catalogue number A10237. Photograph by Milwaukee Public Museum, Neg. No. 421279.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 5—PEORIA COUNTY, ILLINOIS. Material, greenish black and white speckeled granite. Found near the town of Peoria. The surface shows pecking but no evidence of grinding, and no attempt was made to drill a perforation. This is the largest specimen of this type the writer has come in contact with. The weight of this object is three and one-half pounds, and measures six and one-half inches accross.
Dr. A. W. Pendergast collection, Fairbury, Illinois

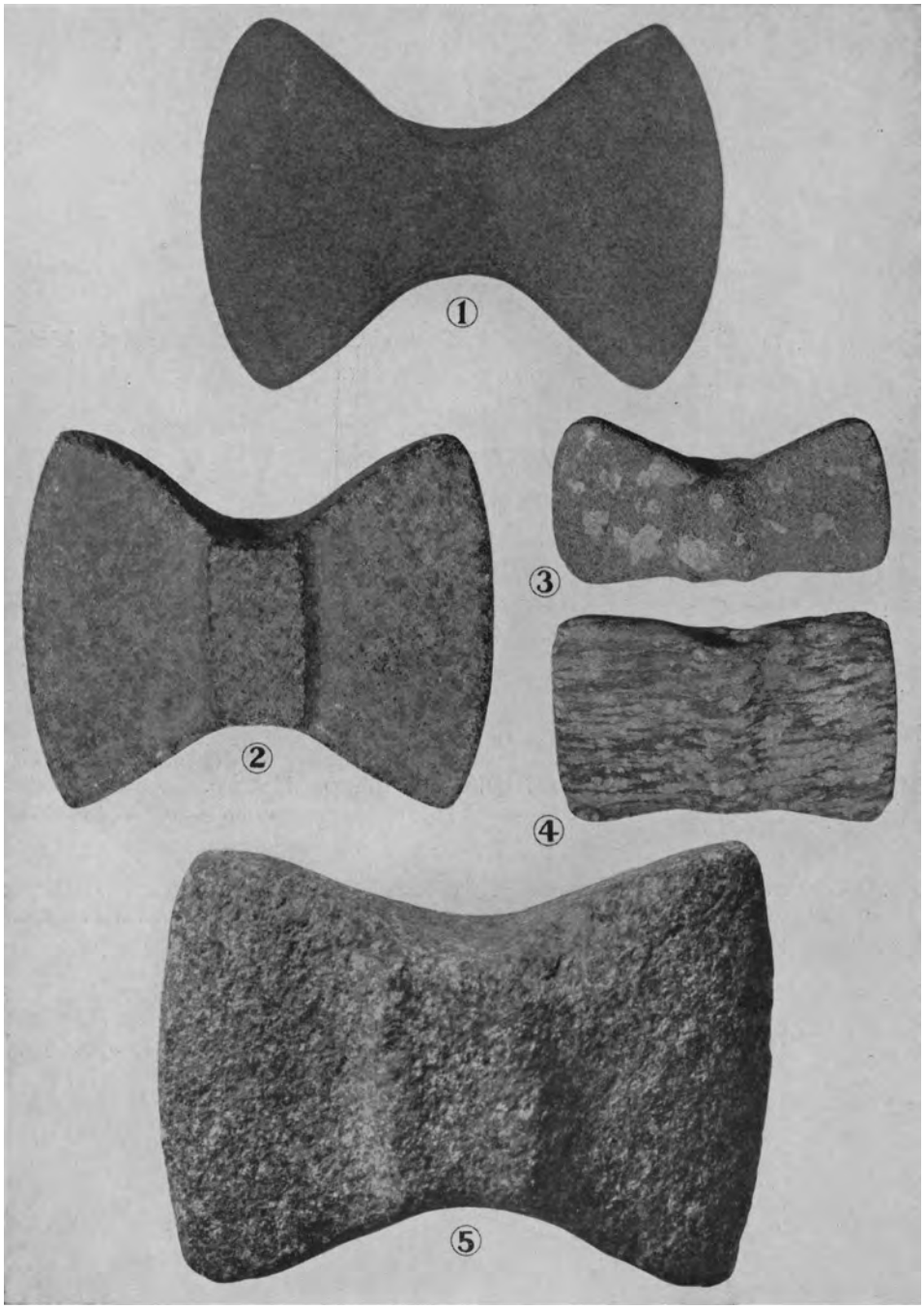


PLATE 207

EXPLANATION OF PLATE 208

WISCONSIN WINGED GROUP

Undrilled (Fetish) Types No. 19 of Various Spotted Granite Materials from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate actual size

No. 1—SCHUYLER COUNTY, ILLINOIS. Material, black and white conglomerate porphyry, highly polished. This specimen is one-fourth inch thick, and both faces are comparatively flat planes. *B. W. Stephens collection, Quincy, Illinois*

No. 2—KANKAKEE COUNTY, ILLINOIS. Material, conglomerate porphyry, green color with large yellow spots, highly polished. This specimen is about one-fourth inch thick in the middle, but tapers until it is quite thin at the outside edge. Catalogue number 635. *From the author's collection*

No. 3—CLINTON COUNTY, KENTUCKY. Material, fine grained gray granite. Catalogue number 560. *From the author's collection*

No. 4—ST. CLAIR COUNTY, ILLINOIS. Material, black and white speckled granite. This specimen is one-fourth of an inch thick and both faces are comparatively flat planes. *B. W. Stephens collection, Quincy, Illinois*

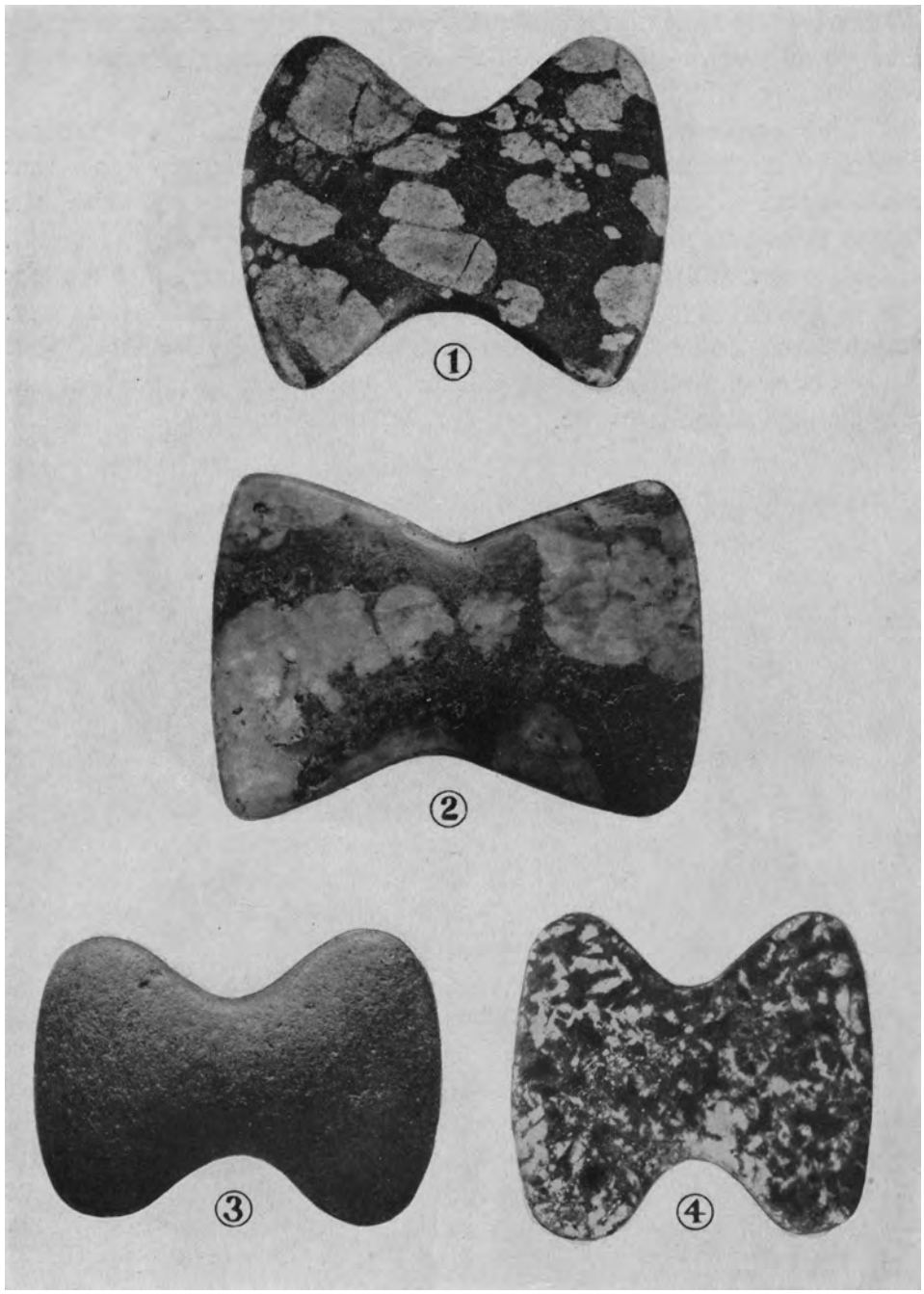


PLATE 208

in some manner to certain important objects, and were regarded as having some ceremonial or spiritual significance. But what these meanings were will probably never be known.

These particular specimens are extremely rare and only five are illustrated in the accompanying plates. It is interesting to know that there existed only one of these specimens in the Payne collection, the largest collection of pre-historic Indian relics assembled in the world. The most beautiful specimen so far observed is shown in Plate 208 under No. 1. This object is made of carefully selected conglomerate porphyry. Another very remarkable specimen is shown under No. 2. This object is made of exceptionally carefully selected spotted porphyry material and shows a high polish from use.

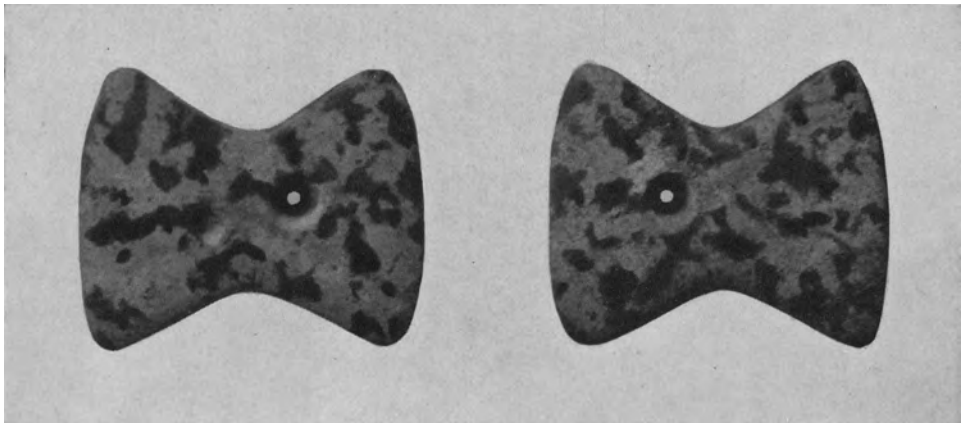


PLATE 209.

Kent County, Michigan. Material, black and white spotted granite, discolored tan from age. This specimen can be classified as an Undrilled Wisconsin Winged (Fetish) pattern even though it is perforated.

Apparently this object was made in the Upper Mississippi Valley Area, and was carried from there to the locality where it was found.

Furthermore, the completed perforation and also the unfinished one were undoubtedly added to this object after it had been taken into the state of Michigan. The reason for this theory is that this is the only specimen of its kind the writer has observed which has been perforated. Both faces of this extremely rare object is shown in the above plate.

Plate actual size. FROM THE AUTHOR'S COLLECTION

CRESCENT GROUP

Considerable has been mentioned concerning the development of the *Crescent* shaped banner-stones in the sub-chapter *Whale Tail Theory*, on page 119. This article points out that there are two distinct highly developed patterns which were developed in two widely separated areas from the simple *Southern Boat-shaped Primary Form No. 6.*

By the table on page 126, which lists the twenty-four groups of banner-stones, one can note the two types which are classified to this group. This article will describe briefly and separately both of these ultimate designs.

NOTCHED CRESCENT

TYPE No. 20

It is obvious that these patterns were developed from the *Southern Boat-shaped Primary Form No. 6.* By following the development of the design from this simply designed pattern to the type specimens which are found within the New England Area one can easily note the travel route which the Indians had taken. This route can be followed from the Primary Area in a northeasterly direction along the eastern coast to the New England Area. It is also interesting to know that within this particular area many underdeveloped patterns occur. Therefore, it is very apparent that the greater part of the evolution of this design had developed within this area.

The wings of the primary forms are usually quite thick and the construction of one end is a flattened or convex plane. These objects are usually made of various materials including steatite of various shades, limonite, finely grained sand-stone, soap-stone and trap-rock, all of which are quite unattractive. A dozen of these objects are shown in Plate 210.

The blending forms are those which show a higher degree of develop-

ment in having rather thin wings. The construction of the blending forms show many variations in shape. These variations show that the design of those which have a straight plane on one end was gradually changed into a concave plane, thus creating the *Crescent* design.

The majority of the blending forms occur within the New England Area. Usually these patterns were made of various materials which are somewhat more attractive than those used for the making of the primary forms. Naturally these materials would include rocks that are found within the New England Area, such as steatite of various shades, differently colored soap-stone, trap rock, and various varieties of slate. A rather large number of these objects are shown in the accompanying plates.

The type specimens are those which are notched at one end. These notches permit one to easily identify those which can be regarded as types from the blending forms. These ultimate patterns show considerable variation in design, yet the lines and planes are invariably the same.

In the sub-chapter, *The Development of Ultimate Designs of Banner-stones Through Breakage*, the writer has advanced the theory that the design of the *Double Notched Butterfly* types was developed through breakage. It is very probable that the design of the *Notched Crescent* types was, likewise, created in this manner. Many of the type specimens were delicately made and are very fragile. Possibly when the end of some of the unnotched patterns was broken by the inserted staff, the damage was transformed into a well formed notch. Thus, a new design was created, the notched design, after which many others were so made.

The type specimens are usually made of the same materials which were used for the making of the blending forms. Although the majority of those encountered occur within the New England Area, a large number also occur in the Upper Ohio Valley Area, particularly in the state of Ohio.

An unusual display of type specimens is shown in Plate 217. Note that No. 2 is extremely highly developed by having an exceptionally deep notch. Note that No. 6 is quite unique in design. One in an offhand manner may classify this object as a *Freak*. But its lines and planes show regulation of form, and the peculiar design of the notch was made to please some Indian's fancy. Note the two specimens Nos. 10 and 11, both of which are from the state of Ohio. The design of these two objects is the same.

MISSISSIPPI VALLEY CRESCENT

TYPE No. 21

The origin of these particular banner-stones can also be traced to the *Southern Boat-shaped Primary Form No. 6.* By following the evolutionary development of this pattern to the ultimate designs one can follow the travel route which the Indians had taken. A number of the primary forms are shown in Plate 218.

The majority of the blending forms occur within the Mississippi Valley, south of the Ohio River. Many of these objects occur within the state of Arkansas, the eastern half of Missouri, the western half of Tennessee and Kentucky, and southern Illinois. Usually these objects are made of various materials, including mainly finely grained and speckled granites. Occasionally specimens have been found made of red hematite; four of which are shown in Plate 219 under Nos. 4, 5, 7 and 8.

A large number of blending forms are shown in Plate 218. Note that Nos. 6 and 8 show a drilled depression on each wing. For what reason these depressions were made is unknown. Possibly they were made for decoration or to signify some ceremonial meaning.

In Plate 220 under No. 9 is illustrated a very unusual specimen that is ornamented with exceptionally large circular shaped depressions upon the one side. One might assume that discs of mother of pearl were inlaid in these depressions, because they are sufficiently deep enough to do so. Two views of the object are illustrated in this plate, one showing the ornamented side which is the face, the other showing the back. This object can be classified as a *single-face* specimen.

The ultimate patterns can easily be identified from the blending forms by the shape of the wings which protrude upward, forming the *Crescent* design. These stones usually show remarkable workmanship and are made of finely speckled or spotted granite material. Three of these objects are shown in Plate 221. The most highly developed specimen so far observed is shown under No. 3. The drilling of the unfinished perforation was probably done with a hollow reed. It is strange that this object was never finished when it was so near completion. This specimen was the only one of its kind in the Payne collection. Similarly designed patterns have been discovered in the southern part of the state of Illinois, but those so far observed were badly broken.

EXPLANATION OF PLATE 210

CRESCENT GROUP

Primary Forms No. 6 and Unnotched Crescent Blending Forms of Various Materials from the Primary, New England and Upper and Middle Ohio Valley Areas

CLASS A AND B SPECIMENS

Plate 1/2 actual size

No. 1—GEORGIA, County unknown. Material, pagodite. Neg. No. 24581G-275946. Case 18. Class A specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—WEST VIRGINIA, county unknown. Material, data unobtained. Catalogue number 56086. Class A specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock. Found near the town of Marlton. No evidence of drilling. Class B specimen.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 4—NEW JERSEY, County unknown. Material, sand-stone. No evidence of drilling, but notches are pecked on both ends. Unfinished specimens are usually difficult to classify. *Dorothy E. Middleton collection, Morristown, New Jersey*

No. 5—BEAVER COUNTY, PENNSYLVANIA. Material, tan mica-schist. Catalogue number 691. Class B specimen. *From the author's collection*

No. 6—TIOGO COUNTY, NEW YORK. Material, probably soap-stone, cream color. Catalogue number 4909. Class B specimen.
Joseph J. Quinlin collection, Dansville, New York

No. 7—NEW JERSEY, County unknown. Material, probably syenite. Catalogue number 44728. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 8—BUCKS COUNTY, PENNSYLVANIA. Material, data unobtained. Note the drawing made by incised lines on the face of the specimen displayed. Class B specimen.
John Maffenbeier collection, Newark, New Jersey

No. 9—BURLINGTON COUNTY, NEW JERSEY. Material, sand-stone. Found near the town of Morristown. Incompleted drilling. Class B specimen.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 10—MEDINA COUNTY, OHIO. Material, soap-stone, pale lavender color, mottled with shades of brown and black. Class B specimen.
Albin A. Elchert collection, New Riegel, Ohio

No. 11—BURLINGTON COUNTY, NEW JERSEY. Material, micalite. No evidence of drilling, but there is a slight groove around the middle of this object. Class B specimen.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 12—FRANKLIN COUNTY, OHIO. Material, calcite, beautifully mottled with shades of orange and tan. Class B specimen.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

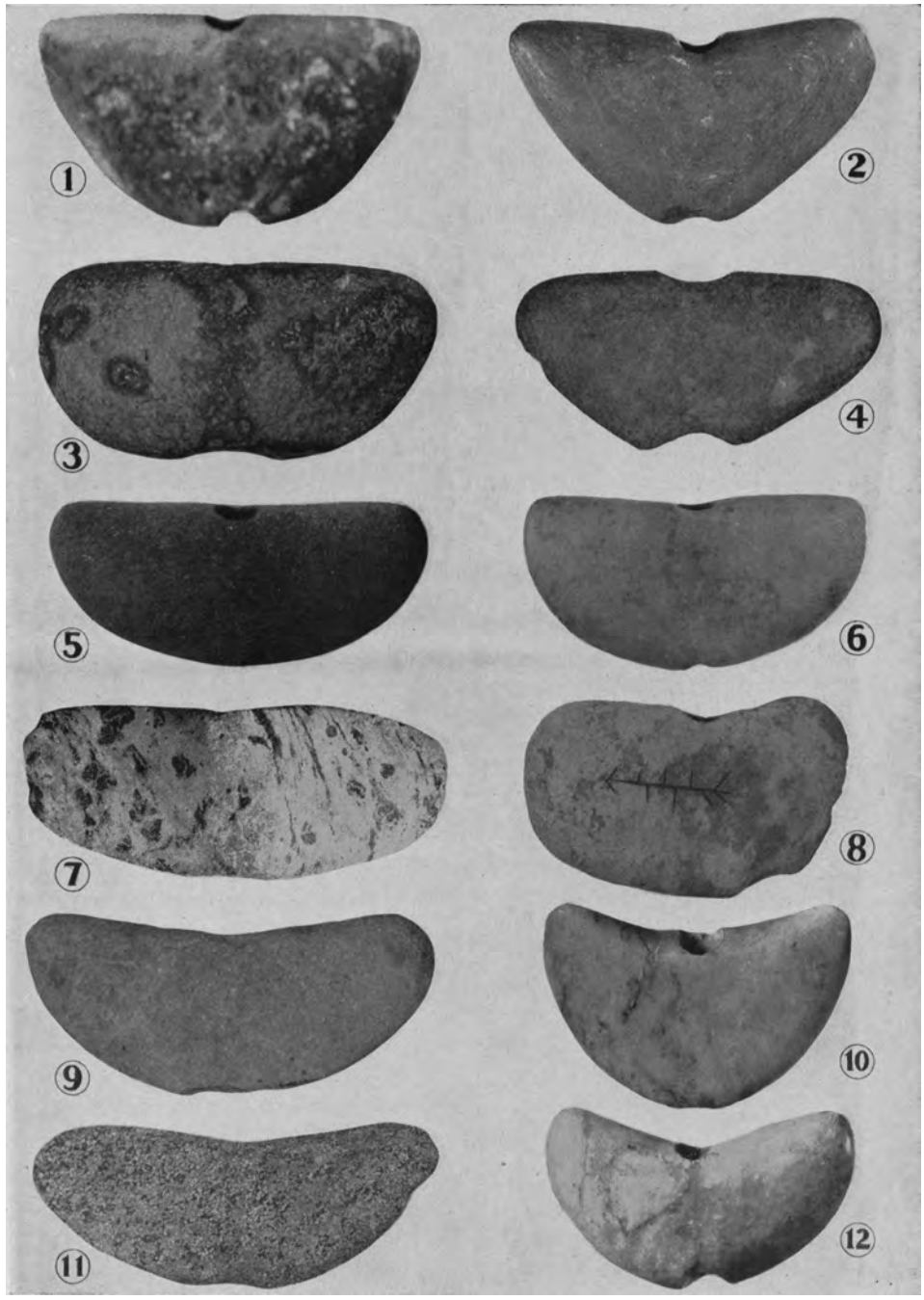


PLATE 210

EXPLANATION OF PLATE 211

CRESCENT GROUP

Unnotched Crescent Blending Forms of Various Materials from the New England Area

CLASS B SPECIMENS

Plate 2/5 actual size

No. 1—MONMOUTH COUNTY, NEW JERSEY. Material, micalite. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 2—MERCER COUNTY, NEW JERSEY. Material, micalite. Drilling just started.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 3—GLOUCESTER COUNTY, NEW JERSEY. Material, gray slate.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 4—PHILADELPHIA COUNTY, PENNSYLVANIA. Material, probably trap rock. Found forty years ago in the town of Philadelphia at Chestnut St.
John Maffenbeier collection, Newark, New Jersey

No. 5—MERCER COUNTY, NEW JERSEY. Material, data unobtained. Catalogue number 11/4502.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 6—NEW JERSEY, County unknown. Material, data unobtained. Catalogue number 44838.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 7—Locality unknown. Material, impure steatite. Incompleted perforation.
Alabama Museum of Natural History, Inc., collection, University, Alabama

No. 8—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 9—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 10—BURLINGTON COUNTY, NEW JERSEY. Material, argylite. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 11—BURKS COUNTY, PENNSYLVANIA. Material, probably trap rock. Catalogue number 6626. Neg. No. 24581E.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 12—MERCER COUNTY, NEW JERSEY. Material, sand-stone. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 13—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock. No evidence of drilling.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 14—RICHLAND COUNTY, OHIO. Material, data unobtained. Catalogue number 3048.
L. C. Snyder collection, Lacona, New York

No. 15—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock.
Dorothy E. Middleton collection, Morristown, New Jersey

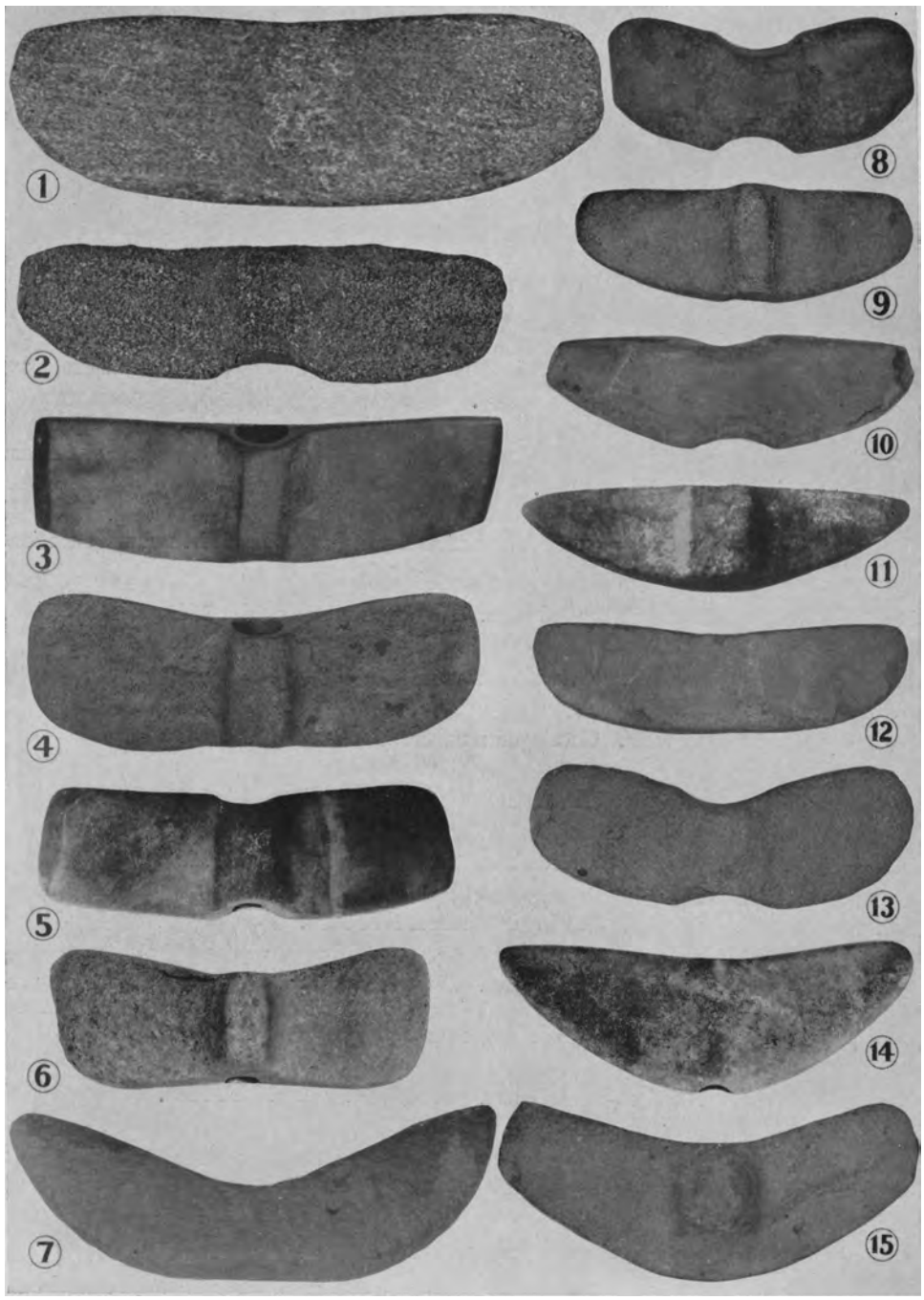


PLATE 211

EXPLANATION OF PLATE 212

CRESCENT GROUP

Unnotched Crescent Blending Forms of Various Slate Materials from the New England Area

CLASS B SPECIMENS

Plate 1/2 actual size

All of the Banner-stones shown in this plate were found in a mound on Rancocas Creek in Burlington County, New Jersey.

See: Hawkes and Linton, A *Pre-Lenape Site in New Jersey*. The University Museum Anthropological Papers, VI, 3, 1916.

All specimens except No. 1 are in the University of Pennsylvania Museum Collection.

No. 1—Material, mottled or banded-slate. Catalogue number, NA 3665.

No. 2—Material, banded-slate. Catalogue number, NA 3649.

No. 3—Material, gray slate. Catalogue number, NA 3664.

No. 4—Material, mottled or banded-slate. Catalogue number, NA 3659.

No. 5—Material, mottled or banded-slate. Catalogue number, NA 3661.

No. 6—Material, gray slate. Catalogue number, NA 3668.

No. 7—Material, mottled or banded-slate. Catalogue number, NA 3663. Note the perforations made for repairing the break in aboriginal times, and the single perforation at the lower edge, the purpose of which is unknown.

No. 8—Material, mottled or banded-slate. Catalogue number, NA 3666.

No. 9—Material, mottled gray-green slate. Catalogue number, NA 3669. Note the broken perforation at upper right hand corner.

No. 10—Material, mottled or banded-slate. Catalogue number, NA 3658.

The University Museum collection, Philadelphia, Pennsylvania

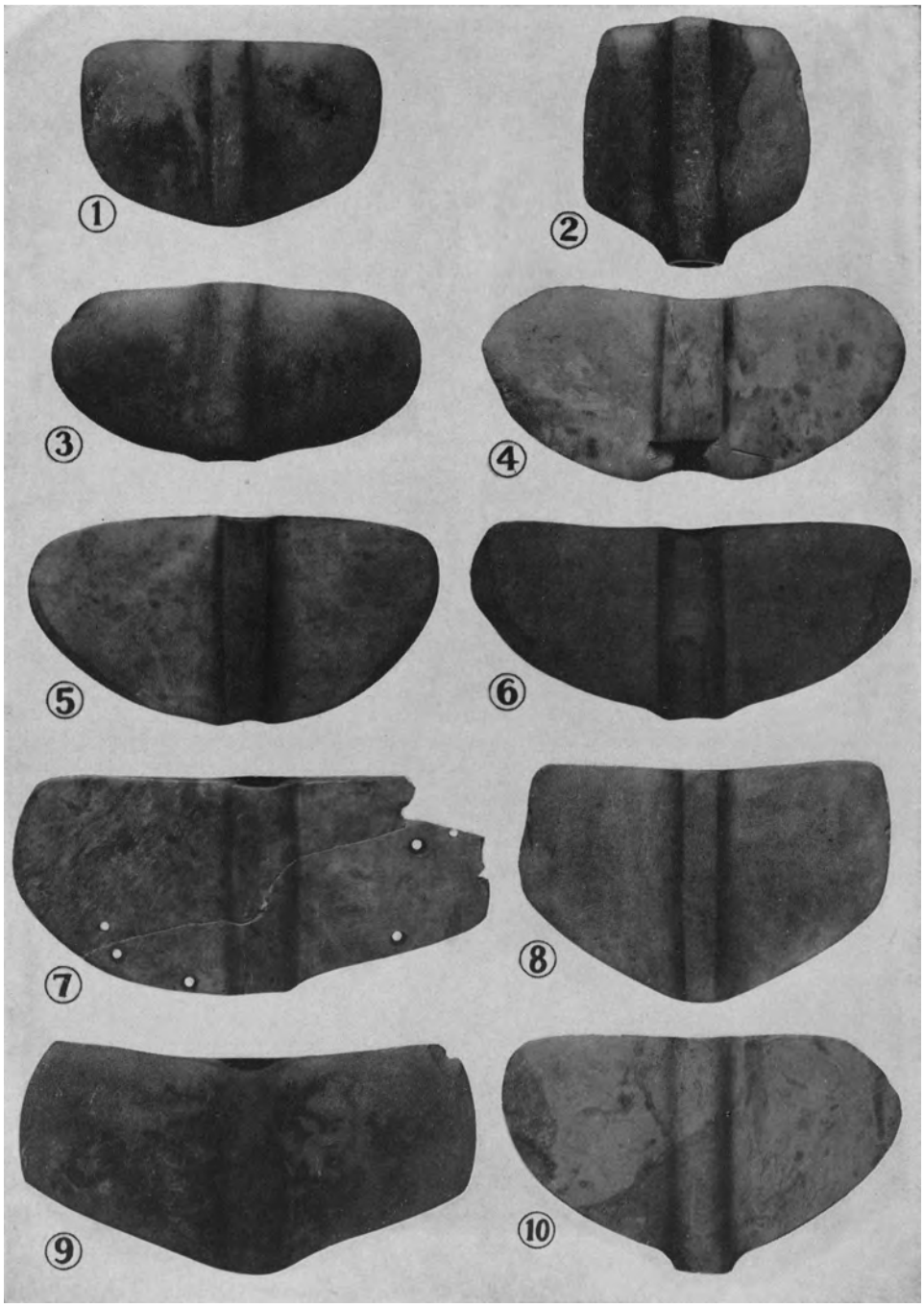


PLATE 212

EXPLANATION OF PLATE 213

CRESCENT GROUP

Unnotched Crescent Blending Forms of Various Materials from the New England Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—Scott County, Virginia. Material, ferruginous slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—West Virginia, County unknown. Material, slate. Catalogue number 56084.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—New England Area, state and county unknown. Material, white quartz.
Logan Museum, Beloit College collection, Beloit, Wisconsin

No. 4—New Jersey, county unknown. Material, probably steatite. Note the broken out portion at the one end, caused apparently by the inserted staff. Catalogue number 44842.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 5—Burlington County, New Jersey. Material, bluish gray slate. Found near the town of Medford. Note the groove on the face of the stone running parallel with the perforation. *Dorothy E. Middleton collection, Morristown, New Jersey*

No. 6—Burlington County, New Jersey. Material, green virtilite, surface polished. Found near the town of Mt. Laurel. Size 5 inches wide.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 7—Burlington County, New Jersey. Material, gray slate, surface polished. Found near the town of Riverton.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 8—Mercer County, New Jersey. Material, mica-schist, surface highly polished. Found near the town of Allentown.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 9—Maine, County unknown. Material, slate. Plate 3. Catalogue number T/2471.
The American Museum of Natural History collection, New York, N. Y.

No. 10—Burlington County, New Jersey. Material, bluish gray slate, surface polished. Found between the towns of Medford and Marlton.
Dorothy E. Middleton collection, Morristown, New Jersey

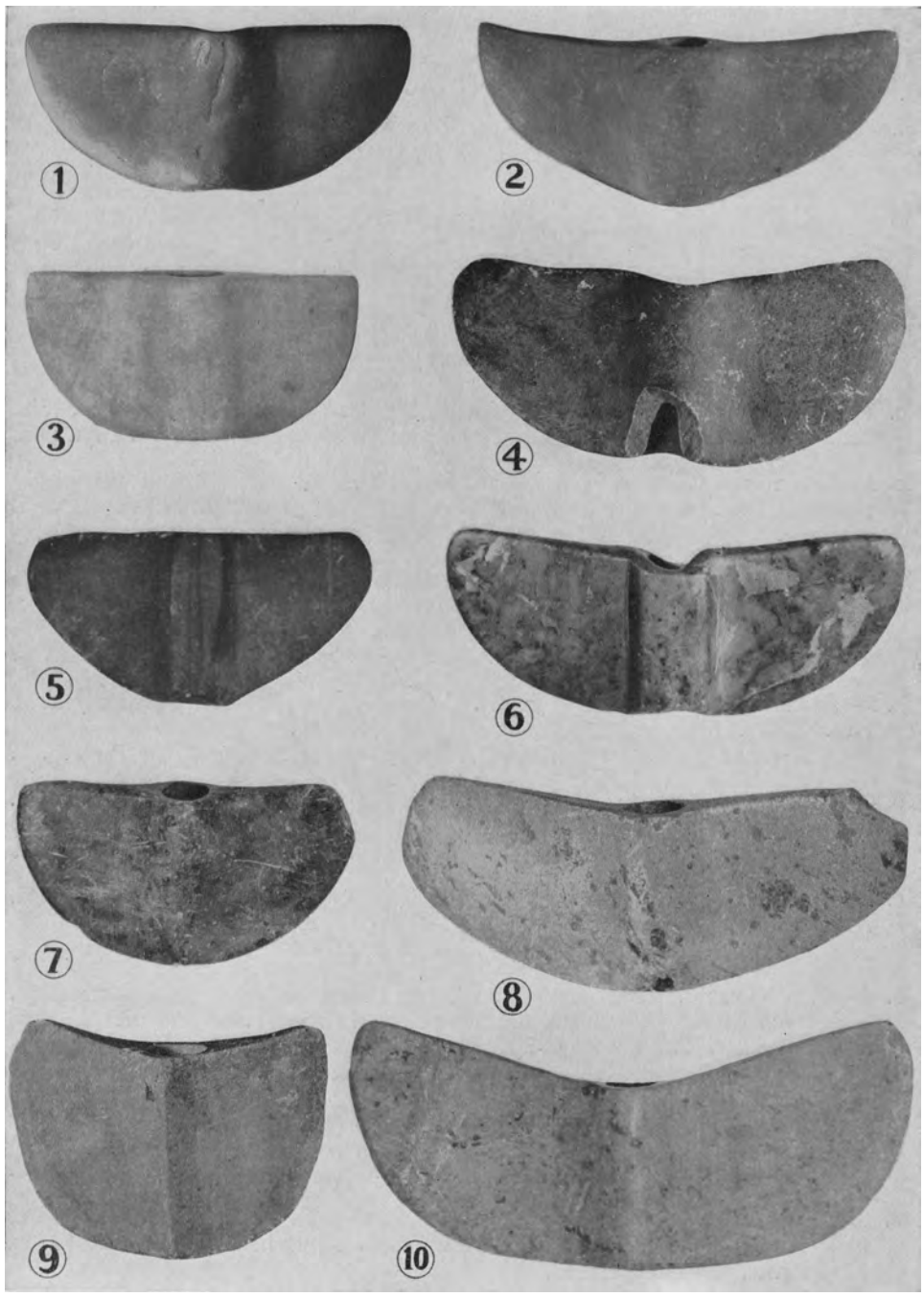


PLATE 213

EXPLANATION OF PLATE 214

CRESCENT GROUP

Primary Form No. 6 and Unnotched Crescent Blending Forms of Various Materials from the Primary, New England and Middle Ohio Valley Areas

CLASS A AND B SPECIMENS

Plate 2/5 actual size

No. 1—JACKSON COUNTY, GEORGIA. Material, tan steatite. Size 5 x 2 1/4 inches. Primary form. Class A specimen. *E. W. Payne collection, Springfield, Illinois*

No. 2—PUTNAM COUNTY, OHIO. Material, brown banded-slate, highly polished. Size 5 x 2 3/8 inches. Class B specimen. *C. W. Fair collection, Davenport, Iowa*

No. 3—BURLINGTON COUNTY, NEW JERSEY. Material, gray mottled soap-stone, highly polished. Found near the town of Medford. Size 5 1/2 x 2 7/8 inches. Class B specimen. *Dorothy E. Middleton collection, Morristown, New Jersey*

No. 4—LUZERNE COUNTY, PENNSYLVANIA. Cast. Material, of original soap-stone, which is in the Wyoming Hist. S. Geological Sec. Catalogue number 324896. Neg. No. 4304-B. Size 5 1/2 x 2 inches. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—BURLINGTON COUNTY, NEW JERSEY. Material, data unobtained, probably slate. Neg. 9/1345. Size 6 x 3 1/4 inches. Class B specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 6—NEW JERSEY, County unknown. Material, argelite. Catalogue number 44840. Size 6 x 2 1/2 inches. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 7—BURLINGTON COUNTY, NEW JERSEY. Material, greenish black slate, polished. Found near the town of Medford. Size 5 1/2 x 3 inches. Class B specimen.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 8—CLAY COUNTY, INDIANA. Material, green banded-slate, discolored from age. This specimen was broken and the two perforations were made to tie the two halves together. Size 6 x 3 1/4 inches. Class B specimen.
A. Roswell collection, Rockford, Illinois

No. 9—MASSACHUSETTS, County unknown. Material, serpentine. Plate 2. Catalogue number T/285. Size 5 3/4 x 2 3/8 inches. Class B specimen.
The American Museum of Natural History collection, New York, N. Y.

No. 10—TIAGO COUNTY, NEW YORK. Material, dark green unbanded-slate. Found at Niggro Hollow near the town of Tiago Center. Catalogue number 4827. Size 4 1/2 x 2 1/2 inches. Class B specimen.
Joseph J. Quinlan collection, Dansville, New York

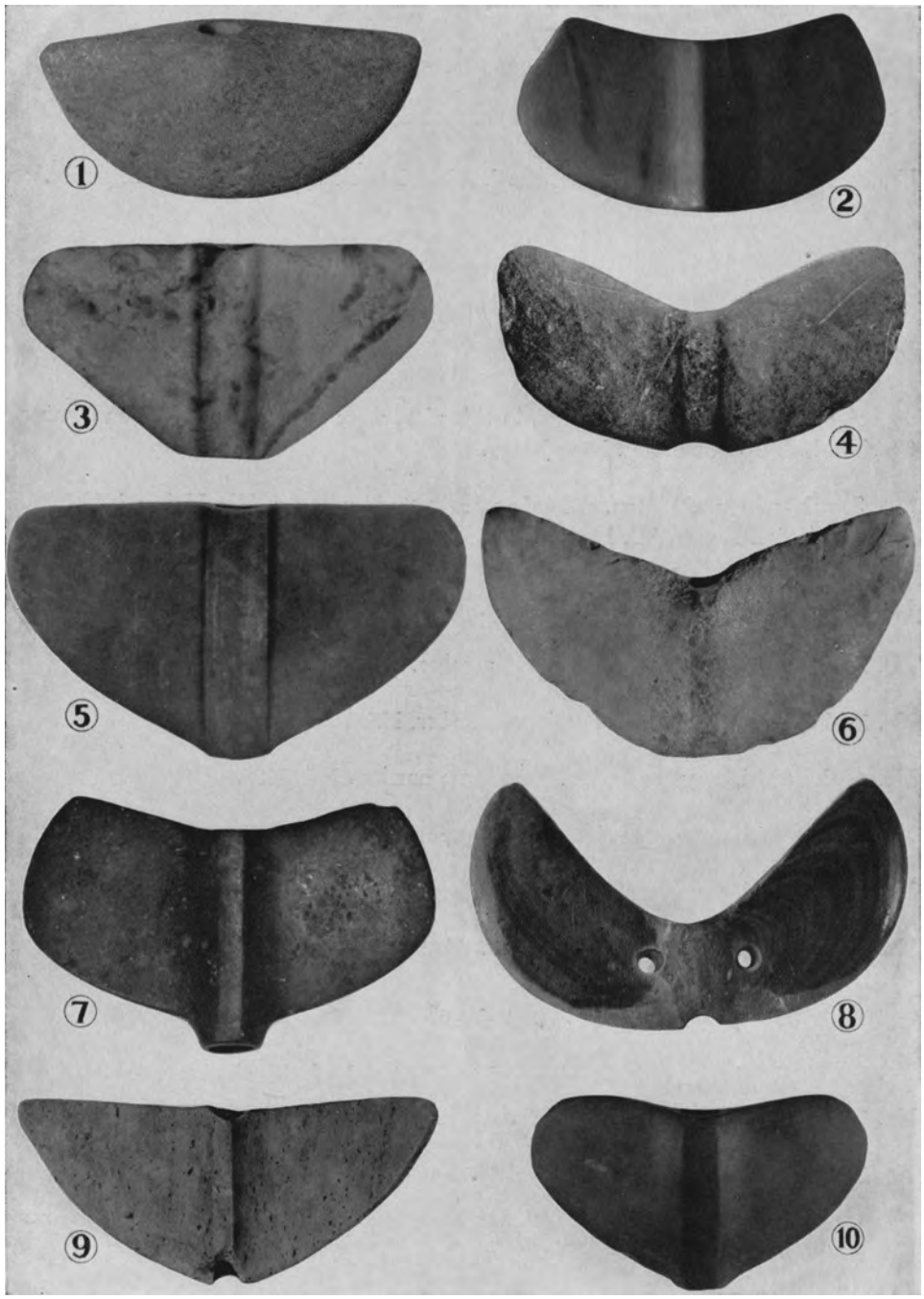


PLATE 214

EXPLANATION OF PLATE 215

CRESCENT GROUP

Unnotched Crescent Blending Forms of Various Materials from the New England Area

CLASS B SPECIMENS

Plate 1/2 actual size

All of the Banner-stones shown in this plate were found in a mound on Rancocas Creek in Burlington County, New Jersey.

See: Hawkes and Linton, A *Pre-Lenape Site in New Jersey*. The University Museum Anthropological Papers, VI, 3, 1916.

No. 1—Material, mottled or banded-slate. Catalogue number, NA 3651.

No. 2—Material, gray slate. Catalogue number, NA 3650.

No. 3—Material, serpentine. Catalogue number, NA 3652.

No. 4—Material, gray-green slate. Catalogue number, NA 3655.

No. 5—Material, gray-green slate. Catalogue number, NA 3654.

No. 6—Material, coarse green slate. Catalogue number, NA 3653.

No. 7—Material, mottled or banded-slate. Catalogue number, NA 3662.

No. 8—Material, mottled or banded-slate. Catalogue number, NA 3667.

No. 9—Material, gray-green slate. Catalogue number, NA 3660.

No. 10—Material, gray-green slate. Catalogue number, NA 3656.

No. 11—Material, mottled gray-green slate. Catalogue number, NA 3657.

The University Museum collection, Philadelphia, Pennsylvania

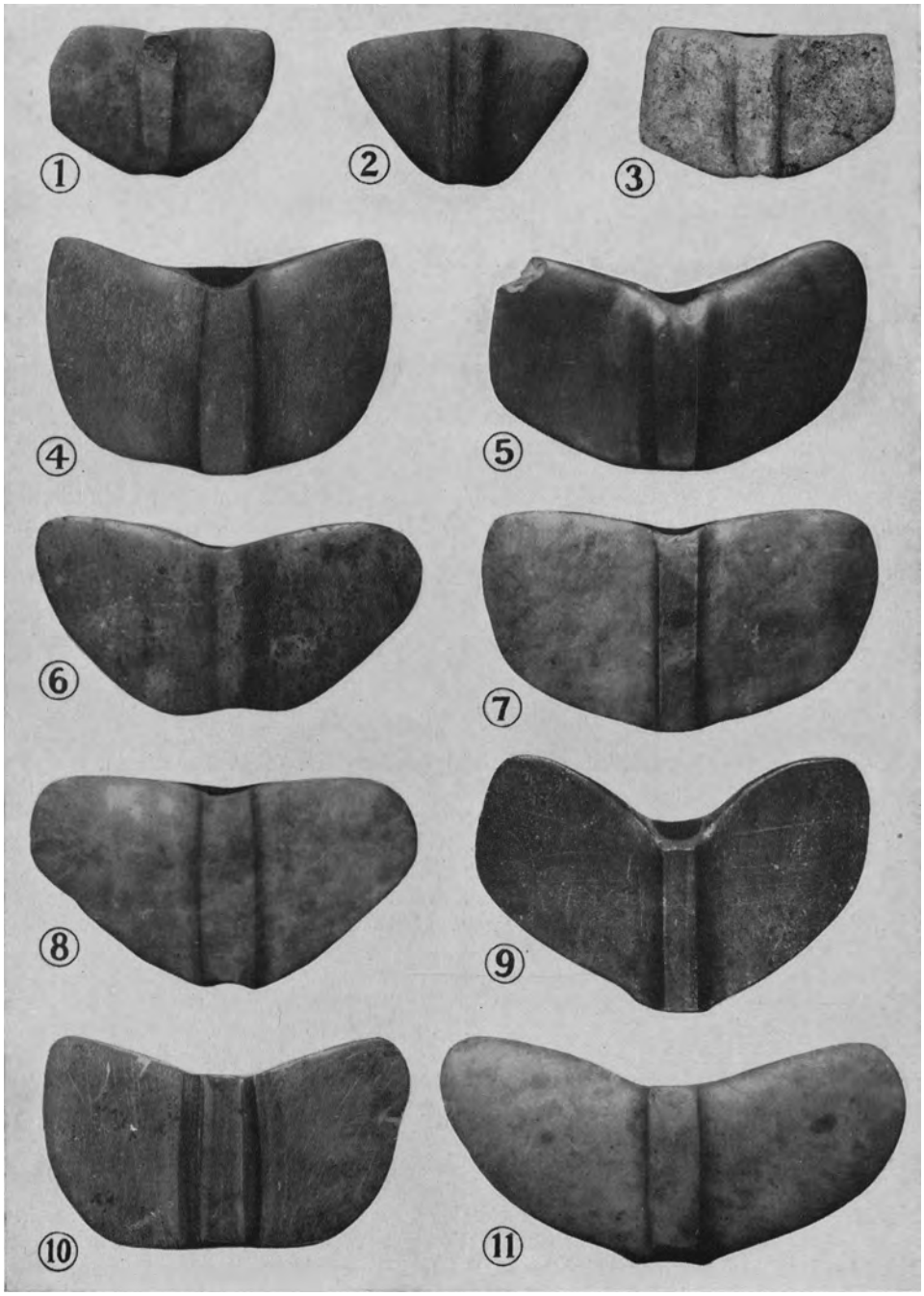


PLATE 215

EXPLANATION OF PLATE 216

CRESCENT GROUP

Primary Forms No. 6, Unnotched Crescent Blending Forms, and Notched Crescent Types No. 20 of Various Materials mainly from the New England Area

CLASS A, B AND C SPECIMENS

Plate 2/5 actual size

No. 1—West Virginia. Material, slate. Catalogue number 56081. Class A specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 2—Massachusetts. Material, banded-slate. Cat. number 56261. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—Cayuga County, New York. Material, soap-stone. Neg. No. 9137. Class B specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 4—Mercer County, New Jersey. Material, quartzite. Catalogue number 19127. Class A specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 5—New York. Material, slate. Case No. 14. Neg. No. 29273. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 6—New York County, New York. Material, trap rock. Neg. No. 8673. Class C specimen.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 7—Calhoun County, Illinois. Material, slate. Catalogue number 722. Class B specimen.
From the author's collection

No. 8—Susquehanna County, Pennsylvania. Material, dark gray slate. Class B specimen.
B. Frank Flory collection, York, Pennsylvania

No. 9—Delaware County, Ohio. Material, banded-slate. Class B specimen.
F. P. Hills collection, Delaware, Ohio

No. 10—Camden County, New Jersey. Material, green slate. Class C specimen.
Dorothy E. Middleton collection, Morristown, New Jersey

No. 11—Linn County, Pennsylvania. Material, spotted soap-stone. Class B specimen.
W. C. Fuellhart collection, Tidoute, Pennsylvania

No. 12—Lancaster County, Pennsylvania. Cast. Material of original syenite. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 13—Beaver County, Pennsylvania. Material, gray steatite, discolored from age. Class B specimen.
W. C. Fuellhart collection, Tidoute, Pennsylvania

No. 14—New Jersey. Material, slate. Catalogue number 2614. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 15—New Hampshire. Material, slate. Cat. number D/M/754. Class B specimen.
American Museum of Natural History collection, New York, N. Y.

No. 16—Massachusetts. Material, slate. Cat. number 148641. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 17—Tennessee. Material, steatite. Catalogue number 20.0/6466. Class B specimen.
The American Museum of Natural History collection, New York, N. Y.

No. 18—St. Charles County, Missouri. Material, gray slate. Class B specimen.
From the author's collection

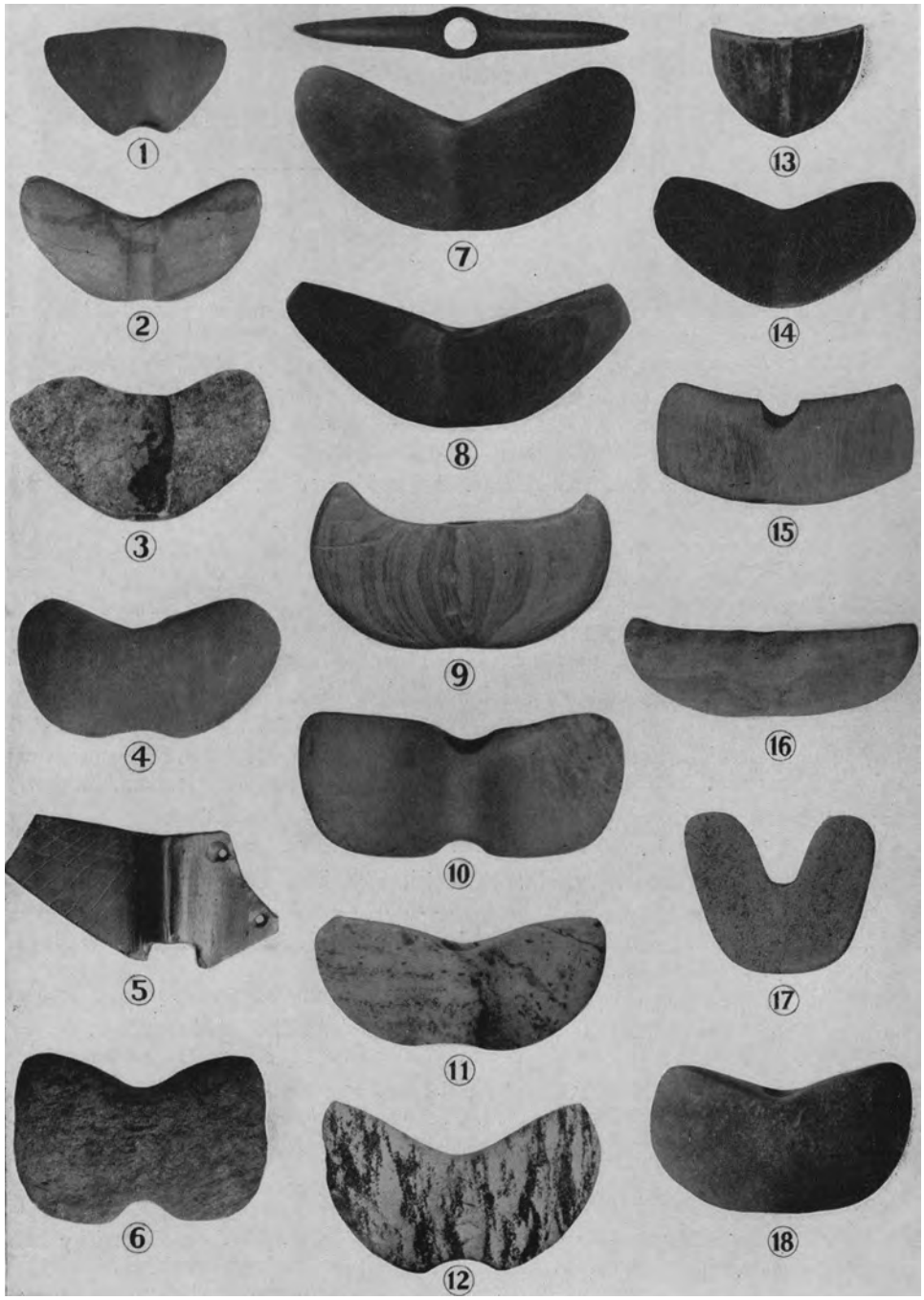


PLATE 216

EXPLANATION OF PLATE 217

CRESCENT GROUP

Notched Crescent Types No. 20 of Various Materials from the New England and Middle Ohio Valley Areas

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—BURLINGTON COUNTY, NEW JERSEY. Material, dark gray stone probably shale, semi-polished. Found south of the town of Medford. Size 7 3/4 x 1 3/4 inches. Drilling 1/2 way through. *Dorothy Middleton collection, Morristown, New Jersey*

No. 2—PRINCE GEORGE, GEORGE COUNTY, MARYLAND. Material, slate. W. O. Eversfield, Case 18. Size 8 x 3 inches. Neg. No. 24581-G-27065.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 3—BURLINGTON COUNTY, NEW JERSEY. Material, argillite. Found near the town of Medford. *Dorothy E. Middelton collection, Morristown, New Jersey*

No. 4—MONITEAU COUNTY, MISSOURI. Material, dark gray slate.
From the author's collection

No. 5—MARYLAND, County, unknown. Material, spotted soap stone. R. R. Reynolds. Case 18. Neg. No. 24581G-34648.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 6—KENTUCKY, County unknown. Material, black slate. Found near Clinch River. Size 5 1/2 x 2 1/4. *Dorothy E. Middleton collection, Morristown, New Jersey*

No. 7—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock. Found near the town of Morrestown. *Dorothy E. Middelton collection, Morristown, New Jersey*

No. 8—WISCONSIN, County unknown. Material, slate. Neg. No. G38.
Peabody Museum of Harvard University, Cambridge, Massachusetts

No. 9—YORK COUNTY, PENNSYLVANIA. Material, gray slate. Found in a field near the town of Frysville. *B. Frank Flory collection, York, Pennsylvania*

No. 10—TRUMBULL COUNTY, OHIO. Material, purple slate, discolored from age. Catalogue number 549. Size 4 x 2 1/2 inches.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 11—SANDUSKY COUNTY, OHIO. Material, banded-slate, discolored from age.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 13—TIOGA COUNTY, NEW YORK. Material, tan soap stone with dark brown spots. Found near the town of Owego. *W. C. Fuellhart collection, Tidioute, Pennsylvania*

No. 14—LANCASTER COUNTY, PENNSYLVANIA. Material, probably soap stone. Neg. No. 6/6932.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 15—CHENANGO COUNTY, NEW YORK. Material, blue banded-slate. Found by Mr. W. R. Coomer in Norwich Twp. in 1862, in bed of Candsawitch Creek.
Dr. A. W. Pendergast collection, Fairbury, Illinois

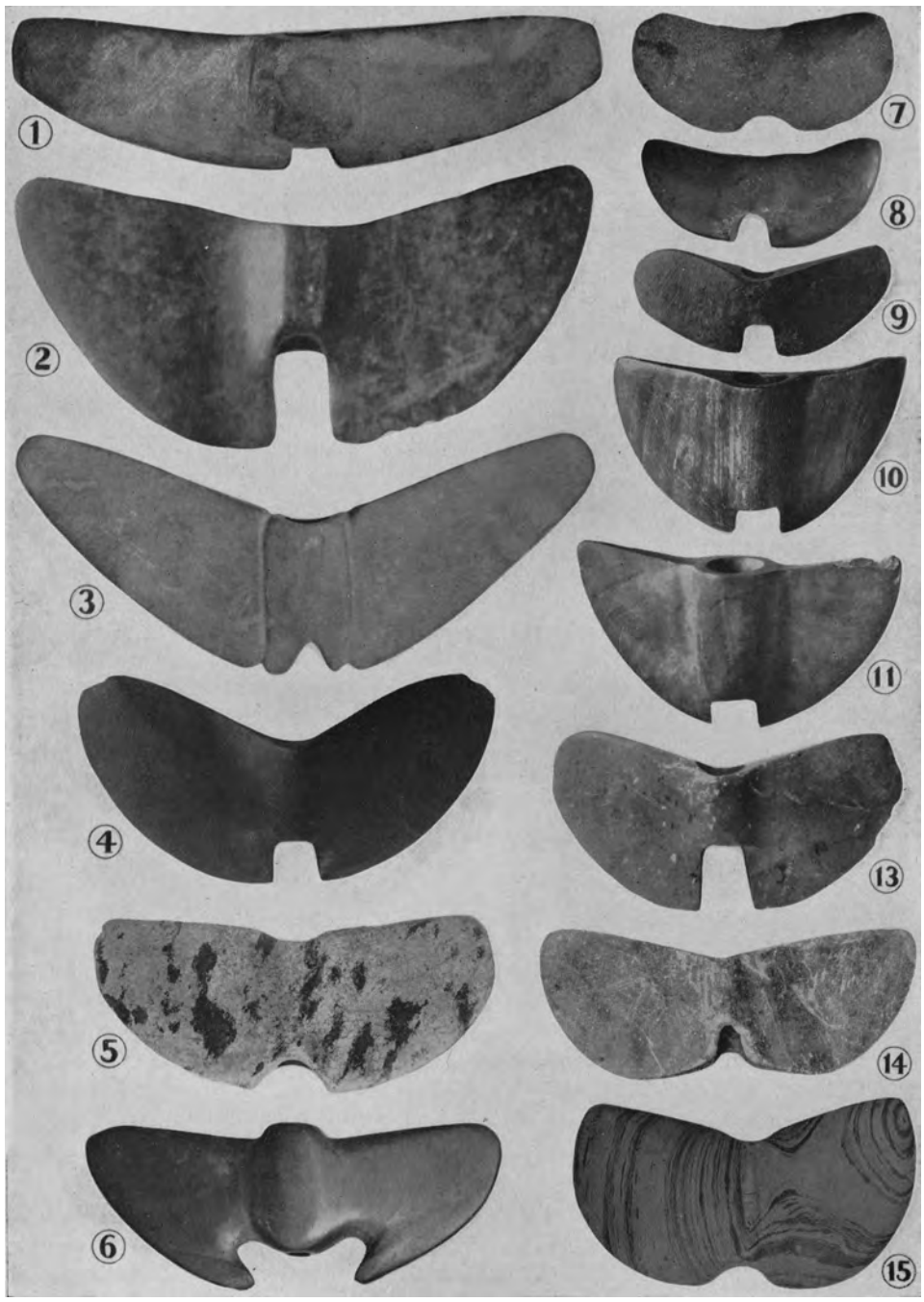


PLATE 217

EXPLANATION OF PLATE 218

CRESCENT GROUP

Primary Forms, and Mississippi Valley Crescent Blending Forms, and Types No. 21 of Various Materials from the Primary and Middle Mississippi Valley Areas

CLASS A, B and C SPECIMENS

Plate 2/5 actual size

No. 1—RICHMOND COUNTY, GEORGIA. Material, soap-stone, tan color. Class A specimen. *E. W. Payne collection, Springfield, Illinois*

No. 2—DADE COUNTY, GEORGIA. Material, light tan indurated clay-stone, covered with a heavy coat of brown patina. Note the 15 tally notches on the face displayed. Class A specimen. *C. C. Benedict collection, Decatur, Illinois*

No. 3—LINCOLN COUNTY, MISSOURI. Material, pink indurated clay-stone. Collected by the author. Class B specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 4—JACKSON COUNTY, ILLINOIS. Material, gray and white spotted granite. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 5—PIKE COUNTY, ILLINOIS. Material, light tan sand-stone. Class B specimen. *E. L. Renno collection, St. Charles, Missouri*

No. 6—HOWARD COUNTY, ARKANSAS. Material, light brown sand-stone. Found near the town of Mineral Springs in 1933. Note the depression on each wing. Catalogue number Z-36. Class B specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 7—TEXAS, County unknown, found in the eastern section. Material, data unobtained. Catalogue number 17320. Neg. No. 24581A. Class B specimen. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 8—LITTLE RIVER COUNTY, ARKANSAS. Material, green stone. Found three miles northeast of the town of Alleene in 1933. Note the depressions on each wing. Catalogue number Z-41. Class B specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 9—UNION COUNTY, ILLINOIS. Material, finely speckled gray granite, discolored brown from age. Found near the town of Balcom in 1935. Hollow reed drilling one inch deep. Class B specimen. *Irvin Peithman collection, Carbondale, Illinois*

No. 10—PEORIA COUNTY, ILLINOIS. Material, dark green plain slate. Found near the town of Pekin. Hollow reed drilling 1/2 inch deep. Class B specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 11—SANGAMON COUNTY, ILLINOIS. Material, green granite. Hollow reed drilling 1/4 inch deep. Class B specimen. *G. I. Groves collection, Chicago, Illinois*

No. 12—Locality unknown. Material, basalt. Class B specimen. *Logan Museum, Beloit College collection, Beloit, Wisconsin*

No. 13—HEMPSTEAD COUNTY, ARKANSAS. Material, grayish brown speckled granite. Found near Ozan Creek in 1905. Catalogue number A-23. Class C specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

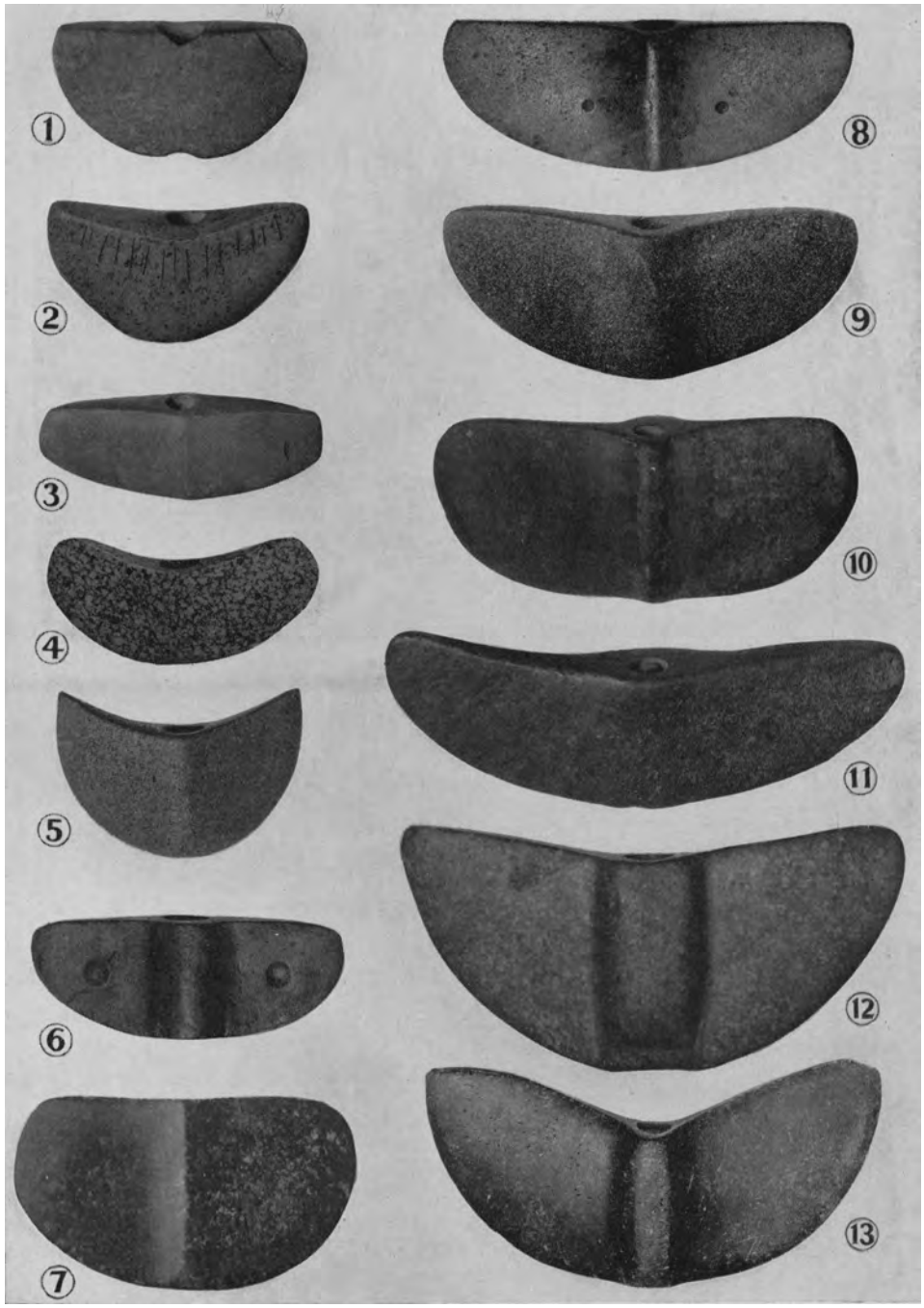


PLATE 218

EXPLANATION OF PLATE 219

CRESCENT GROUP

Mississippi Valley Crescent Blending Forms of Various Materials from the Lower and Middle Mississippi Valley Areas

CLASS B SPECIMENS

Plate 5/11 actual size

No. 1—Scott County, Arkansas. Material, green granite. Hollow reed drilling 1/2 inch deep, showing the core was broken off. Found on the surface in 1938. Catalogue number Z-19.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 2—Crawford County, Arkansas. Material, light tan indurated clay-stone, discolored brown in mottled patterns from age. Hollow reed drilling 1 1/8 inch deep, showing the core is broken off about 1/8 inch from the bottom of the incompleted perforation. Found in 1928. Catalogue number 489.
From the author's collection

No. 3—Garland County, Arkansas. Material, light tan fine grained sand-stone. The outside surface is finished, but there is no evidence of drilling. Found near the town of Bear. *From the author's collection*

No. 4—Reynolds County, Missouri. Material, red hematite. Found near the town of Centerville. This specimen is pecked into shape and shows no evidence of drilling. Banner-stones of this material are rare. *B. W. Stephens collection, Quincy, Illinois*

No. 5—Callaway County, Missouri. Material, brown limonite or hematite. The outside surface of this specimen shows evidence of pecking yet the perforation is completed. There is a quarry of this material near the town of Fulton, in Callaway County, Missouri. *Kyle L. Sly collection, St. Louis, Missouri*

No. 6—Harden County, Ohio. Material, green and white spotted granite, discolored from age. Solid stick drilling just started on one end. *From the author's collection*

No. 7—Franklin County, Missouri. Material, red hematite. This specimen is pecked into shape and shows no evidence of drilling.
B. W. Stephens collection, Quincy, Illinois

No. 8—Crawford County, Missouri. Material, hematite. This specimen was found on the same farm that the beautiful large ferruginous Quartz Butterfly banner-stone, illustrated on page 409 under No. 8. The shape of this specimen is rather unusual and may be accounted for by two reasons. Either the individual who made it endeavored to modify the shape of the crescent design, or possibly the upper part of the wings of this specimen became damaged, and were ground down to obliterate the damage, thus causing the protruding area in the middle of the stone.
Dr. P. F. Titterington collection, St. Louis, Missouri

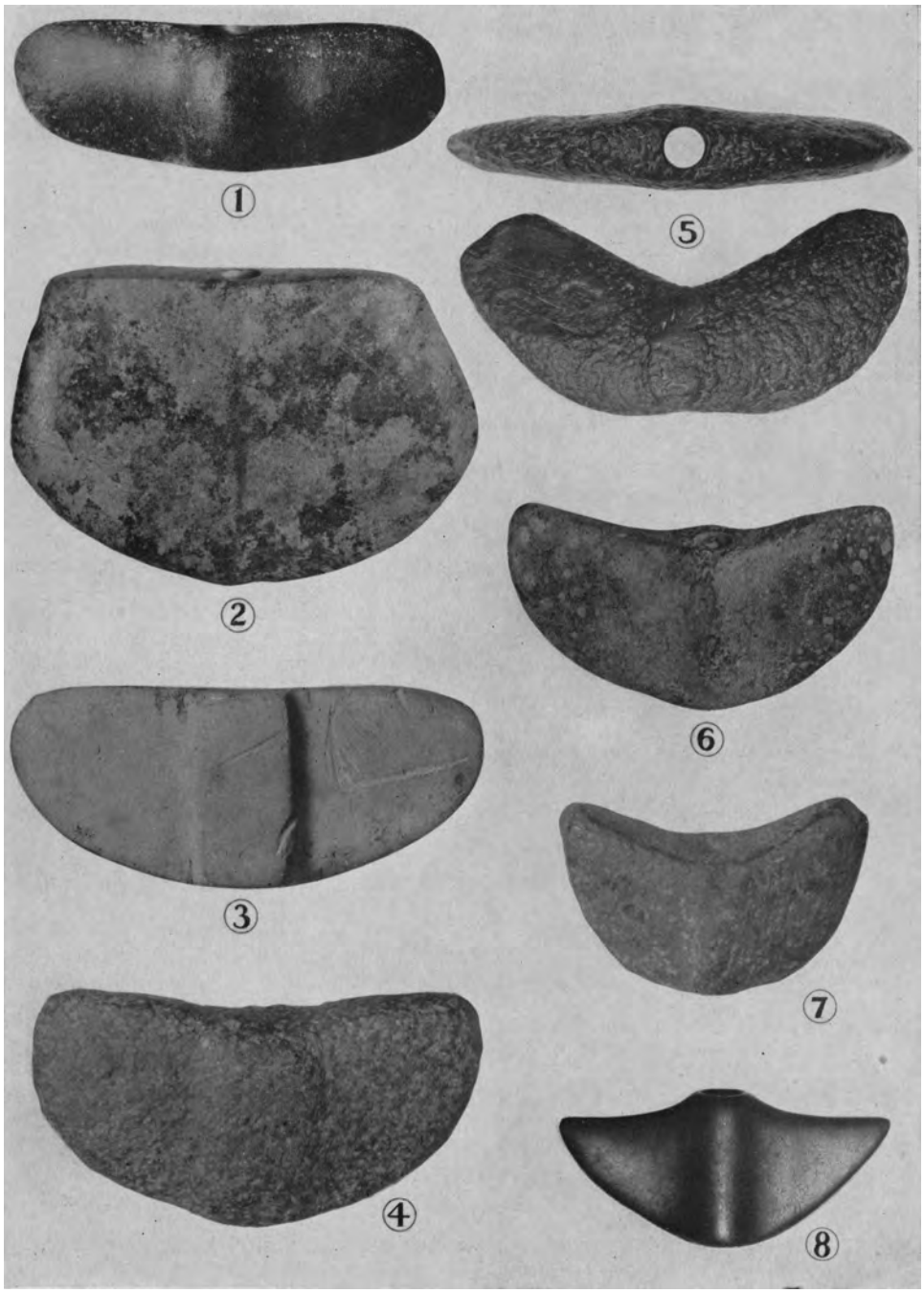


PLATE 219

EXPLANATION OF PLATE 220

CRESCENT GROUP

Mississippi Valley Crescent Blending Forms of Various Materials from the Primary and Middle Mississippi Valley Areas

CLASS A, B AND C SPECIMENS

Plate 5/11 actual size

No. 1—COLBERT COUNTY, ALABAMA. Material, bluish gray finely grained sandy shale. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 2—GRAVES COUNTY, KENTUCKY. Material, brown ferruginous slate. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 3—HENRY COUNTY, TENNESSEE. Material, dark red hematite. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 4—COLBERT COUNTY, ALABAMA. Material, dark reddish brown unbanded ferruginous slate. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 5—HICKMAN COUNTY, KENTUCKY. Material, tan and white speckled granite. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 6—BALLARD COUNTY, KENTUCKY. Material, black and white mottled granite. Note that both wings were broken off and the perforations show that the pieces were tied together. Class C specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 7—COLBERT COUNTY, ALABAMA. Material, bluish gray sandy shale. Hollow reed drilling one fourth inch of being through. Class A specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 8—GRAVES COUNTY, KENTUCKY. Material, ferruginous slate. Class B specimen.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 9—HENRY COUNTY, TENNESSEE. Material, dark red hard stone, probably Jasper. Two views of this rare specimen are shown. The top view shows the side that has two large circular shaped depressions. The other side is plain. For this reason this object is a single-face pattern. Class B specimen.
Mrs. Blanche Busey King, Ancient Buried City, Wickliffe, Kentucky

No. 10—HENRY COUNTY, TENNESSEE. Material, gray and white speckeled granite, discolored from age. Class B specimen.
Mrs. Blanche Busey King, Ancient Buried City, Wickliffe, Kentucky

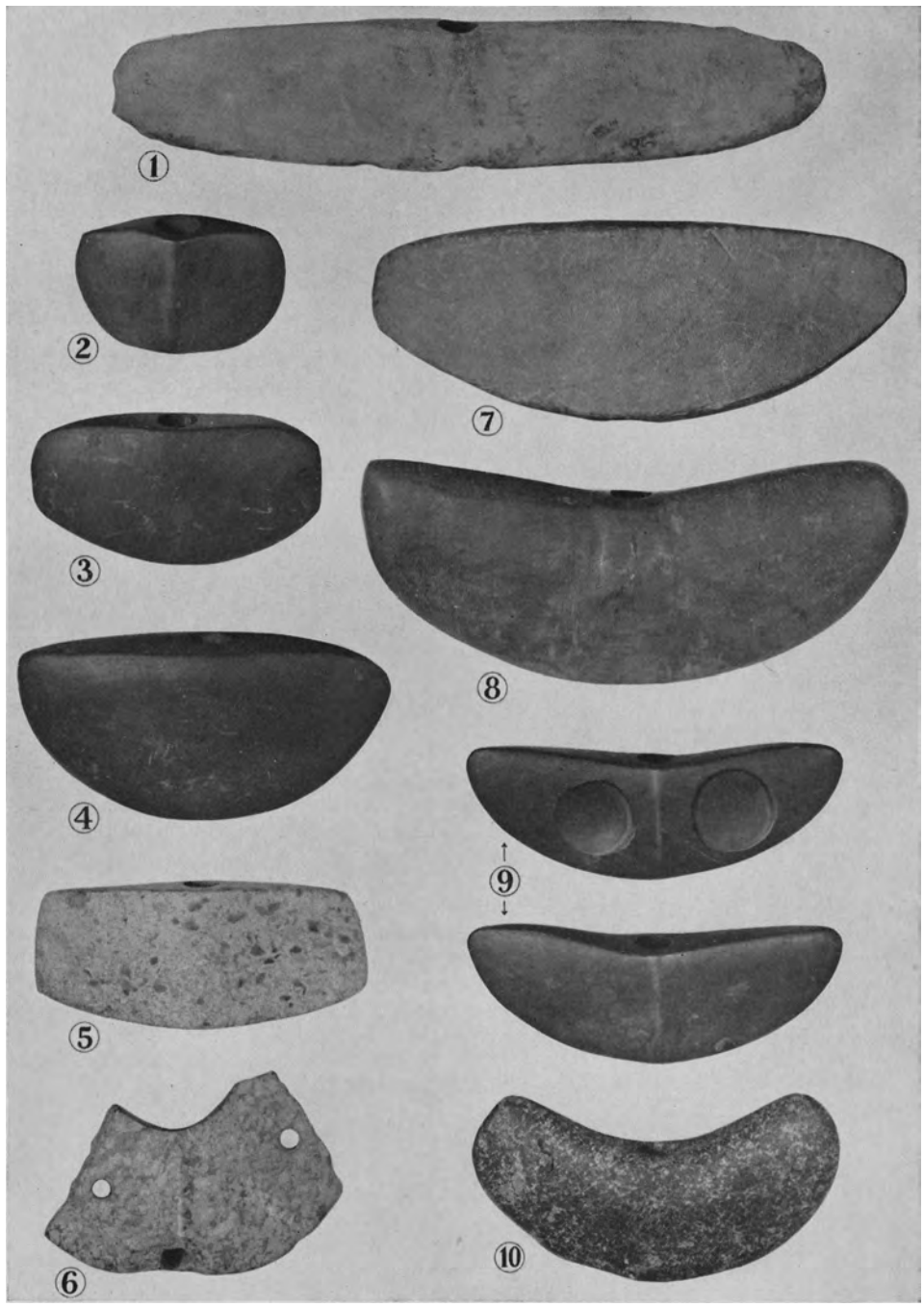


PLATE 220

EXPLANATION OF PLATE 221

CRESCENT GROUP

Mississippi Valley Crescent Types No. 21 of Spotted Granite and Serpentine Materials from the Middle Ohio and Middle Mississippi Valley Areas

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—Cape Girardeau County, Missouri. Material, black and tan spotted granite, highly polished. Part of one wing restored. This specimen is exceptionally highly developed and shows remarkable workmanship. Collected by the author.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—Stark County, Ohio. Material, dark green serpentine, highly polished. This specimen is exceptionally beautiful, and shows remarkable workmanship.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 3—Obion County, Tennessee. Material, black and white finely speckled granite, weathered and discolored from age. This specimen is exceptionally highly developed and is the only complete one of this size that the writer has observed. Quite frequently he has come in contact with a number of damaged and broken specimens that were similarly designed, and were comparable in size and workmanship to this one. Formerly in the E. W. Payne collection. Size 5 5/8 x 3 3/8 inches.
From the author's collection

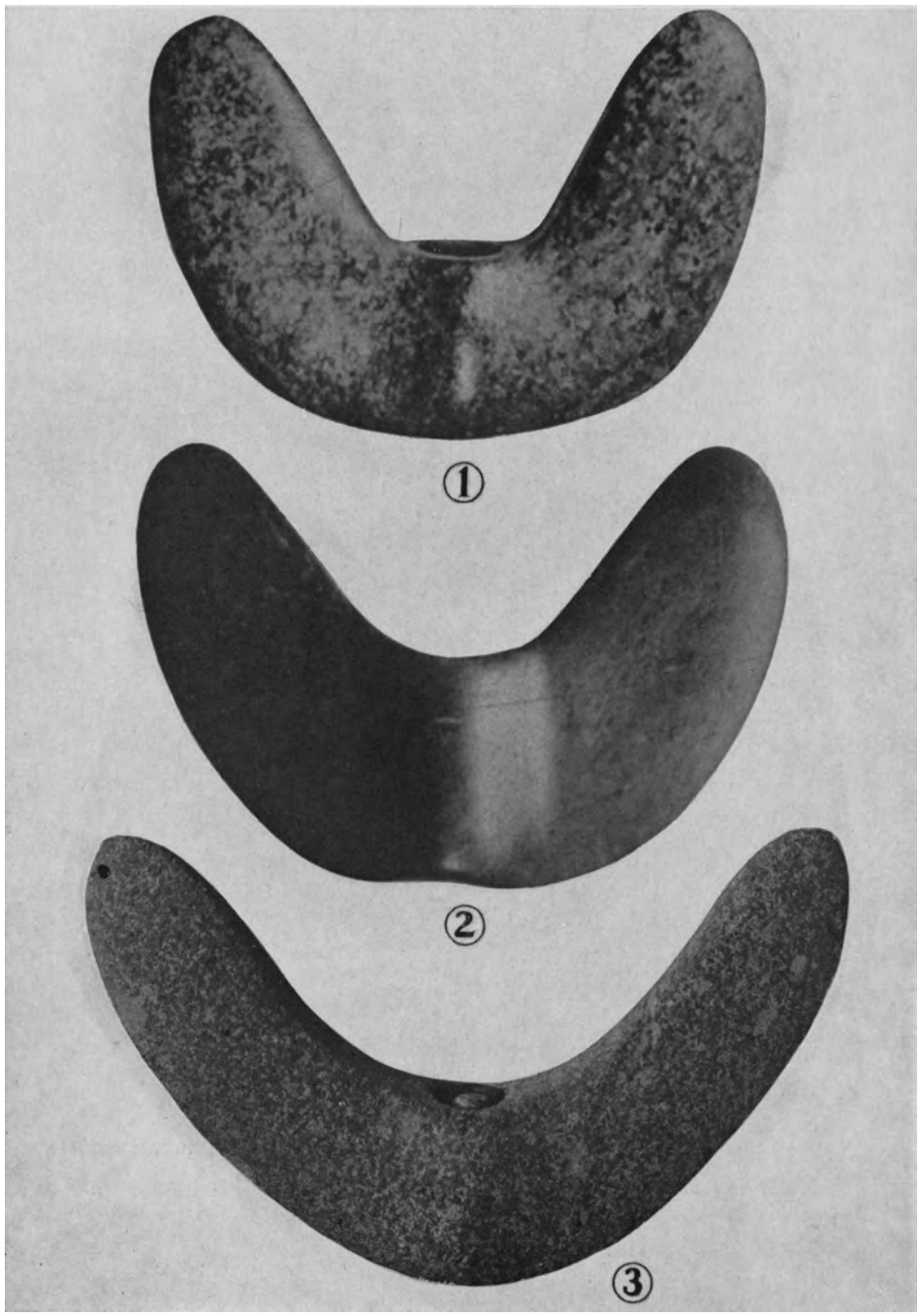


PLATE 221

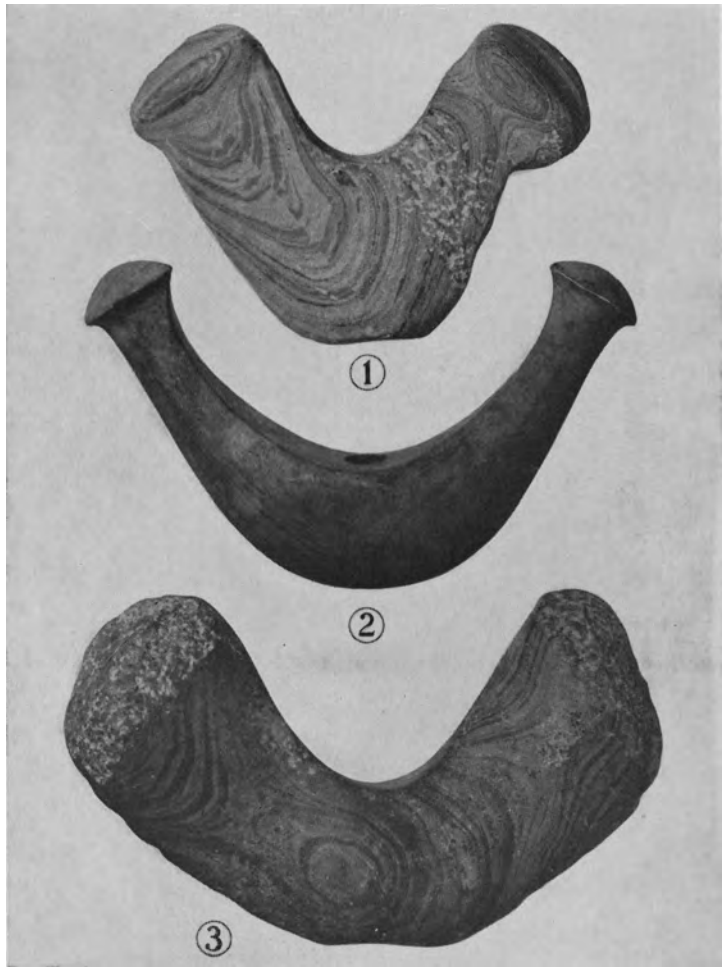


PLATE 222.

Knobbed Lunate banner-stones of banded-slate, unfinished and finished.

No. 1—Cook County, Illinois. No evidence of drilling.

No. 2 Clark County, Wisconsin. Perforation present.

FROM PHILIP C. SCHUPP COLLECTION, CHICAGO, ILLINOIS

No. 3—Ohio, County unknown. No evidence of drilling.

FROM E. W. PAYNE COLLECTION, SPRINGFIELD, ILLINOIS

Plate 1/2 actual size.

KNOBBED LUNATE GROUP

TYPE No. 22

The design of these particular patterns was given the name *Lunate* many years ago. The writer has taken the liberty to add to this name the term *Knobbed*, thereby describing the design more definitely. The term Lunate has occasionally been misused in describing other patterns that do not belong to this group, such as, the *Curved Pick, Type No. 23* and the *Crescent, Types Nos. 20 and 21*. Therefore, by using the term *Knobbed Lunate* there should be no further difficulty in identifying these specimens.

By referring to the pen-and-ink drawings on page 155, one can observe the evolutionary development of this design. One can note that the *Southern Boat-shaped Primary Form No. 6* was the origin of this group. These simple patterns from the Primary Area show a construction similar to that of a boat. The one end is shaped into a flattened or slightly convex plane. By this flattened plane one can easily identify them from those which are classified as blending forms. Usually these objects are made of various materials including steatite, limonite, and ferruginous slate.

Frequently within the Heart Area underdeveloped patterns are also found which show that one end is a flattened or slightly convex plane, which can naturally be classified as primary forms.

The blending forms occur abundantly within the banded-slate or Heart Area. These objects show a great variation in construction. The early made blending forms are those which have on one end a slightly concave plane. The more highly developed patterns are those which have very pronounced concave planes. A rather large number of these objects are shown in Plates 223 and 224. One can follow the evolutionary development of the design by the curvature of these planes.

The type specimens occur most abundantly within the Heart Area. Occasionally these objects have been discovered within the states of Pennsylvania and New York and even farther distances from this area.

(*Continued on Page 488*)

EXPLANATION OF PLATE 223

KNOBBED LUNATE GROUP

Uncurved and Slightly Curved Unknobbed Blending Forms of Various Slate Materials mainly from the Heart Area

CLASS B SPECIMENS

Plate 2/5 actual size

No. 1—ALBANY COUNTY, NEW YORK. Material, light banded-slate. Neg. No. 24581 D. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

No. 2—HILLSDALE COUNTY, MICHIGAN. Material, green banded-slate. *From the author's collection*

No. 3—CHEROKEE COUNTY, NORTH CAROLINA. Material, data unobtained, probably steatite. Found near Beaver Dam. Width 4 inches. *Museum of the American Indian, Heye Foundation collection, New York, N. Y.*

No. 4—FAYETTE COUNTY, INDIANA. Material, green banded-slate. Width 4 3/4 inches. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 5—WISCONSIN, County unknown. Material, unbanded-slate. Note the seven tally notches on the lower edge on one wing. Catalogue number G1245. *Peabody Museum of Harvard University collection, Cambridge, Mass.*

No. 6—WYOMING COUNTY, NEW YORK. Material, gray banded-slate. Found near the town of Warsaw Because of the raised ridge on the one side displayed, this is a single-face specimen. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 7—DELAWARE COUNTY, INDIANA. Material, green banded-slate. Catalogue number 2917. Width 5 1/2 inches. Collected by the author. *L. C. Snyder collection, Lacona, New York*

No. 8—BROWN COUNTY, OHIO. Material, green banded-slate, discolored from age. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 9—OHIO, County unknown. Material, grayish green unbanded-slate, discolored from age. Width 7 inches. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 10—Locality unknown, probably Ohio. Material, unbanded-slate. *E. W. Payne collection, Springfield, Illinois*

No. 11—TUSCARAWAS COUNTY, OHIO. Material, dark green banded-slate. *W. C. Fuellhart collection, Tidioute, Pennsylvania*

No. 12—DELAWARE COUNTY, INDIANA. Material, green banded-slate. Catalogue number 779. Width 6 inches. *From the author's collection*

No. 13—MONTGOMERY COUNTY, INDIANA. Material, bluish green slate. *C. C. Benedict collection, Decatur, Illinois*

No. 14—CHENANGO COUNTY, NEW YORK. Material, dark green slate, faintly banded. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 15—FRANKLIN COUNTY, OHIO. Material, green banded-slate. Width 7 inches. *Ohio State Archaeological and Historical Society collection, Columbus, Ohio*

No. 16—NEW YORK, County unknown. Material, green slate, faintly banded. Plate 3. Catalogue number 13/105. Width 6 1/2 inches. *American Museum of Natural History collection, New York, N. Y.*

No. 17—FAIRFIELD COUNTY, CONNECTICUT. Material, green banded-slate. Found near the town of Fairfield. Catalogue number 11528. Neg. No. 29278. B. B. Kellogg. *Smithsonian Institution, United States National Museum collection, Washington, D. C.*

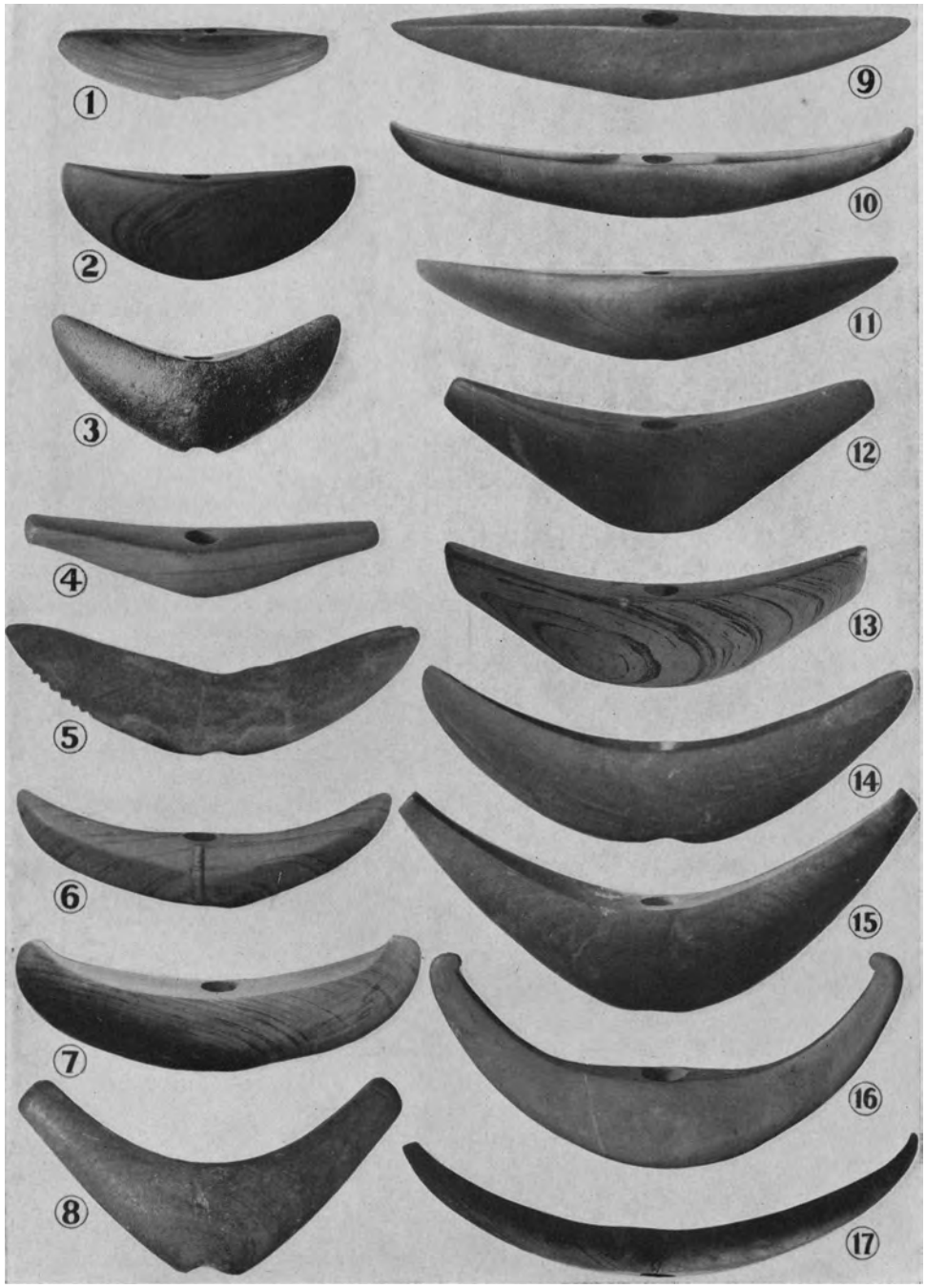


PLATE 223

EXPLANATION OF PLATE 224

KNOBBED LUNATE GROUP

Primary Forms No. 6 and Unknobbed Blending Forms of Various Materials from the Southern and Heart Areas

CLASS A AND B SPECIMENS

Plate 2/5 actual size

No. 1—WYTHE COUNTY, VIRGINIA. Materials, dark red and green mottled soap-stone. Size 4 3/4 inches wide. Primary form. Class A specimen.
N. E. Carter collection, Elkhorn, Wisconsin

No. 2—OHIO, County unknown. Material, banded-slate. Size 4 5/8 inches wide. Catalogue number 20564. Class A specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—HILLSDALE COUNTY, MICHIGAN. Material, light green banded-slate. Size 5 inches wide. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 4—KNOX COUNTY, INDIANA. Material, dark green banded-slate. Size 5 inches wide. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 5—MERCER COUNTY, OHIO. Material, green banded-slate. Size 4 1/8 inches wide. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 6—JACKSON COUNTY, MICHIGAN. Material, green banded-slate. Size 4 inches wide. Catalogue number 607. Class B specimen.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 7—ALABAMA, County unknown. Material, impure steatite with quartz inclusions. Size 3 inches wide. Class A specimen.
Alabama Museum of Natural History collection, University, Alabama

No. 8—ORLEANS COUNTY, NEW YORK. Material, black slate. Found in 1865. Size 3 inches wide. Class B specimen. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 9—PARKE COUNTY, INDIANA. Material, green banded-slate. Size 4 inches wide. Class B specimen. *Charles S. Street collection, New York, N. Y.*

No. 10—HILLSDALE COUNTY, MICHIGAN. Material, light banded-slate. Size 4 1/4 inches wide. Class B specimen. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 11—ALLEN COUNTY, INDIANA. Material, green banded-slate. Size 5 1/8 inches wide. Class B specimen. *Lesley Hill collection, deceased, Ft. Wayne, Indiana*

No. 12—OHIO, County unknown. Material, dark banded-slate. Plate 2. Catalogue number 8/31. Size 4 1/2 inches wide. Class B specimen.
The American Museum of Natural History collection, New York, N. Y.

No. 13—INDIANA, County unknown. Material, banded-slate. Size 4 1/8 inches wide. Catalogue number 15702. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 14—DEKALB COUNTY, INDIANA. Material, banded-slate. Size 4 1/8 inches wide.
Donald O. Boudeman collection, Kalamazoo, Michigan

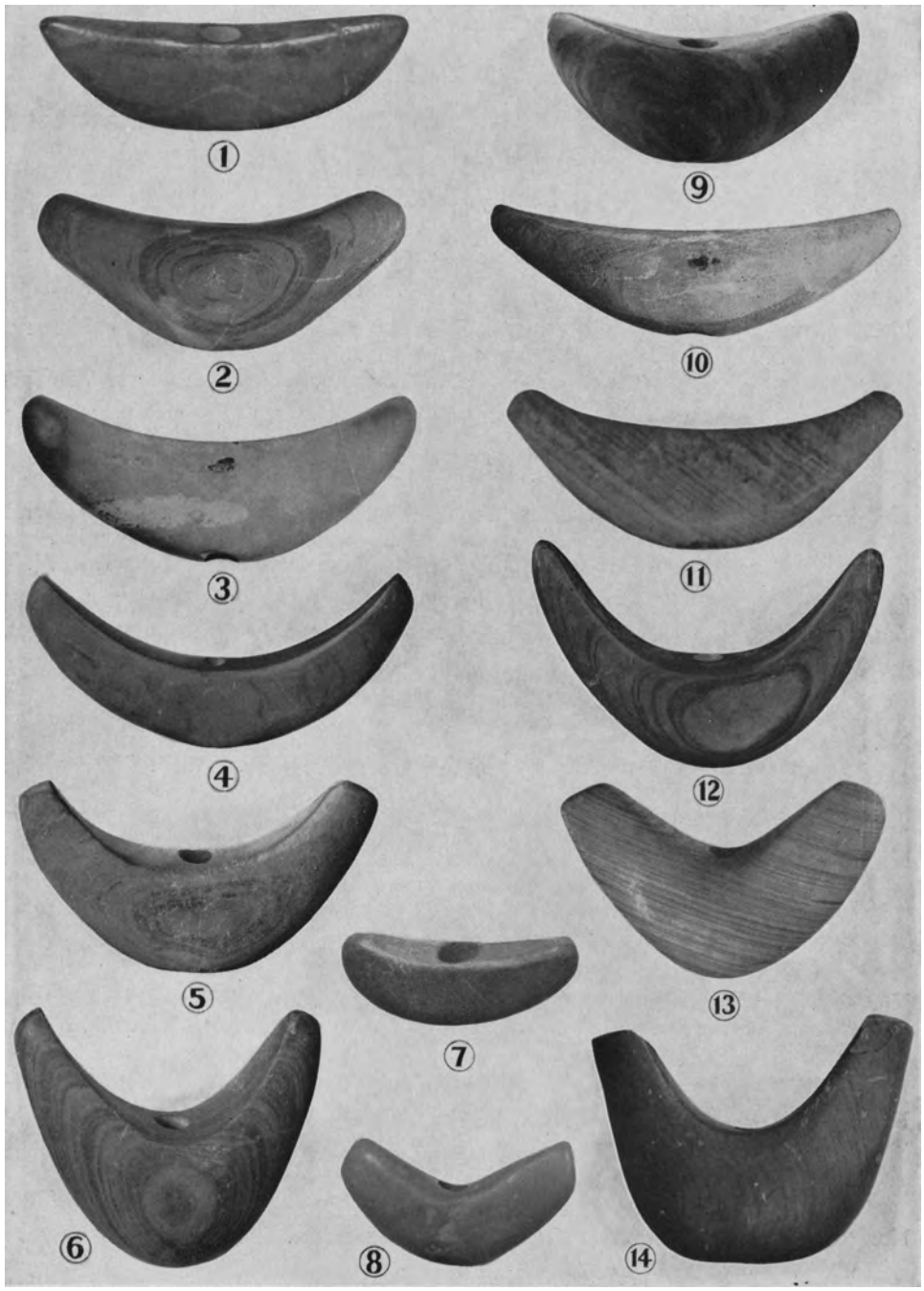


PLATE 224

EXPLANATION OF PLATE 225

KNOBBED LUNATE GROUP

Knobbed Lunate Types No. 22 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—GENESEE COUNTY, MICHIGAN. Material, green banded-slate. Catalogue number 224. Size 3 1/4 x 2 1/8 inches. *Dr. B. J. Moss collection, East Tawas, Michigan*

No. 2—LIVINGSTON COUNTY, MICHIGAN. Material, green banded-slate, no evidence of drilling. Unfinished specimen. Size 4 1/2 x 2 1/2 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—BRANCH COUNTY, MICHIGAN. Material, blue banded-slate. The knobs of this specimen are not very pronounced. Size 4 x 2 1/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—NOBLE COUNTY, INDIANA. Material, green banded-slate. Note that the ends of this specimen are slightly flared. Neg. No. 4/6859. Size 5 3/8 inches wide.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 5—EATON COUNTY, MICHIGAN. Material, green banded-slate. Size 6 1/4 inches wide.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—CALHOUN COUNTY, MICHIGAN. Material, blue banded-slate. Size 5 1/2 x 3 1/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—GRANT COUNTY, INDIANA. Material, banded-slate. Found six miles southwest of the town of Marion. Catalogue number 97834. Neg. No. 24581E. Size 6 x 3 1/2 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 8—LAPEER COUNTY, MICHIGAN. Material, blue banded-slate, partly restored. This pattern with the short or contracted prongs with knobs of abnormal size, is the largest specimen of its kind the writer has ever observed. Banner-stones designed in this manner are exceedingly rare. Size 5 x 3 3/4 inches.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 9—MONTGOMERY COUNTY, PENNSYLVANIA. Material, banded-slate. Found near the town of Norristown. J. H. McElvaine. Catalogue number 824. Neg. No. 24581E. Size 6 x 4 1/2 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 10—GREENE COUNTY, NEW YORK. Material, dark green steatite. This specimen with the unusual knobs probably could be classified as a Freak. Size 3 7/8 x 2 1/2 inches. The perforation is three-fourths of an inch in diameter.
E. K. Petrie collection, Burlington, Wisconsin

No. 11—ROSS COUNTY, OHIO. Material green banded-slate. This specimen is very unusually designed. Size 7 1/2 x 4 1/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

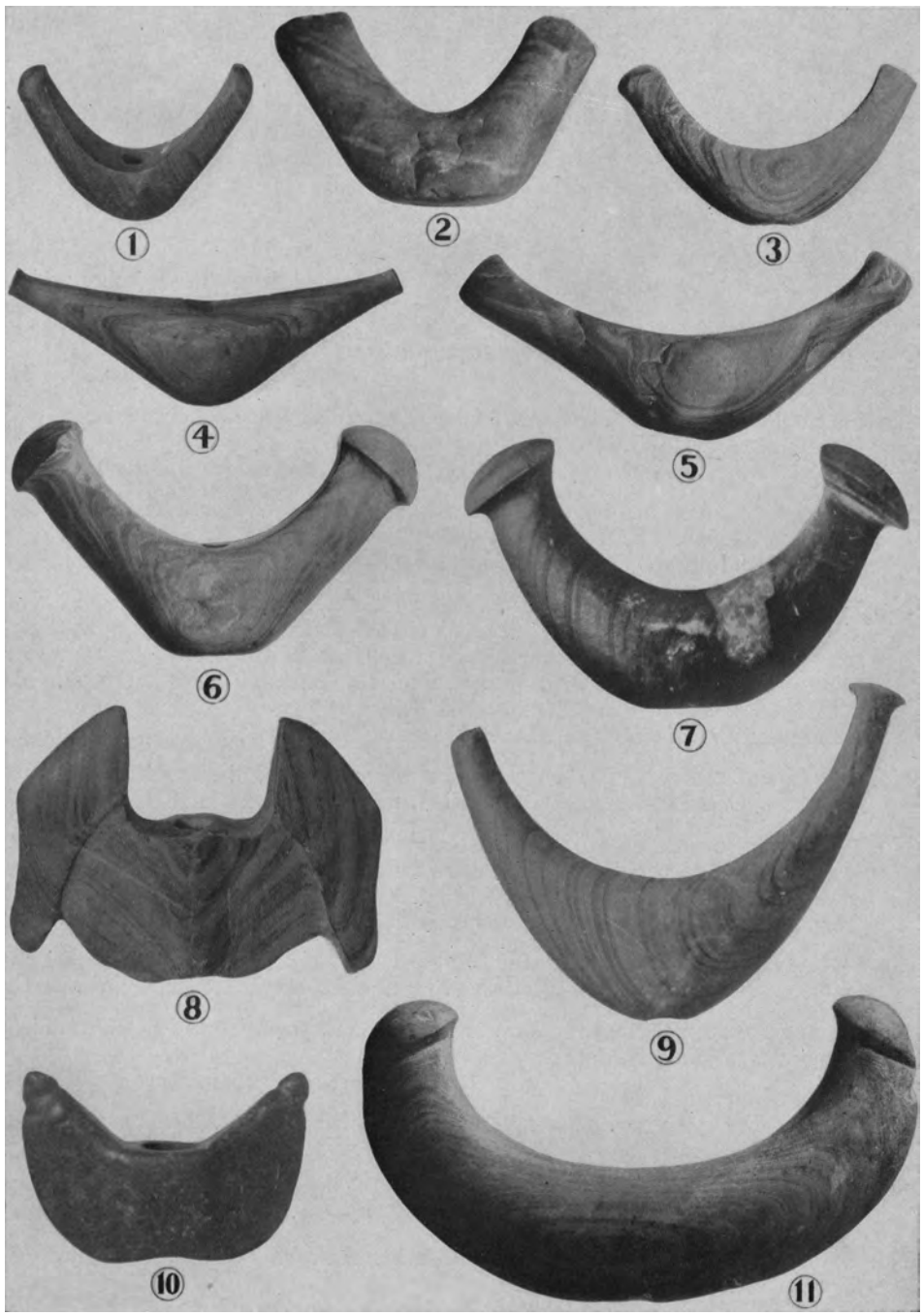


PLATE 225

EXPLANATION OF PLATE 226

KNOBBED LUNATE GROUP

Knobbed Lunate Types No. 22 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—TRUMBULL COUNTY, OHIO. Material, blue banded-slate. Size 5 inches wide.
B. W. Stephens collection, Quincy, Illinois

No. 2—KNOX COUNTY, OHIO. Material, banded-slate. Size 5 1/2 inches wide.
L. C. Snyder collection, Lacona, New York

No. 3—MICHIGAN. County unknown. Material, green banded-slate. Size 8 inches wide. Plate (3). Neg. No. D-M/265.
American Museum of Natural History collection, New York, N. Y.

No. 4—Locality unknown. Material, slate. Floor exhibition. Catalogue number 6808. Neg. No. 24581F. Size 8 1/4 inches wide.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—CABELL COUNTY, WEST VIRGINIA. Material, slate. Found near the town of Huntington. This specimen and the one illustrated under No. 6 are undoubtedly the most highly developed and the most beautifully made patterns of this type so far observed by the writer. B. J. Wilson, Case 18, Catalogue number 173605. Neg. Nos. 24581G-29278. Size 7 7/8 inches wide.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 6—MIAMI COUNTY, OHIO. Material, green banded-slate, discolored from age.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 7—BROWN COUNTY, OHIO. Material, dark bluish-gray compact slate, faintly banded. The incompleted perforation, 7/16 of an inch in diameter is drilled from the lower end of this specimen 1/2 inch deep. Size 5 1/2 inches wide. Catalogue number 122. Neg. No. 2. *Arthur R. Altick collection, Springfield, Ohio*

No. 8—LAKE COUNTY, OHIO. Material, dark green faintly banded-slate. Size 5 5/8 inches. wide. *Ohio State Archaeological and Historical Society collection, Columbus, Ohio*

No. 9—BUCKS COUNTY, PENNSYLVANIA. Material, dark green banded-slate. Catalogue number 344. Size 5 1/2 inches wide.
John Maffenbeier collection, Newark, New Jersey

No. 10—Locality unknown. Material, dark green banded-slate, discolored from age. Size 4 1/2 inches wide. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 11—WYOMING COUNTY, NEW YORK. Material, light green banded-slate. Size 4 1/2 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 12—LICKING COUNTY, OHIO. Material, dark green faintly banded-slate. Size 4 3/4 inches wide.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

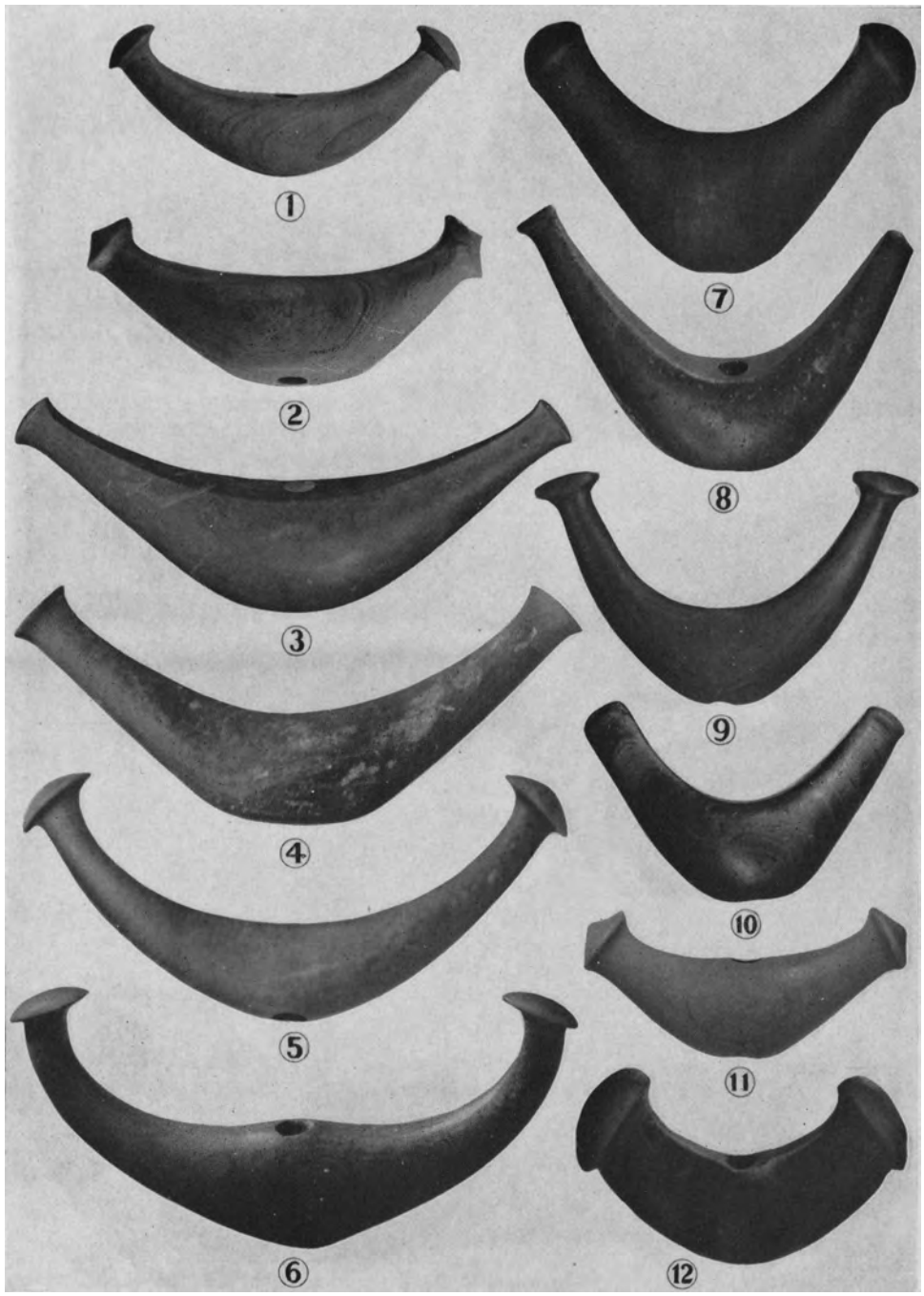


PLATE 226

EXPLANATION OF PLATE 227

KNOBBED LUNATE GROUP

Knobbed Lunate Types No. 22 of Various Banded-Slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/12 actual size

No. 1—STEUBEN COUNTY, INDIANA. Material, plain, unbanded slate.
C. W. Fair collection, Davenport, Iowa

No. 2—JAY COUNTY, INDIANA. Material, blue banded-slate. Size 3 1/8 x 3 1/8 inches.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 3—OHIO, County unknown. Material, plain unbanded slate. Negative No. 785.
Museum of the American Indian, Heye Foundation, New York, N. Y.

No. 4—WAYNE COUNTY, INDIANA. Material, blue banded-slate. Formerly in the E. W. Payne collection. Size 4 x 3 5/8 inches. *From the author's collection*

No. 5—EATON COUNTY, MICHIGAN. Material, green banded-slate. Specimens of this shape with the short contracted prongs and abnormal knobs are exceedingly rare.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—DELAWARE COUNTY, INDIANA. Material, blue banded-slate.
Dr. Rollin H. Bunch collection, Muncie, Indiana

No 7—DARKE COUNTY, OHIO. Material, banded-slate. Note that this specimen is identical in shape as No. 8. Both of these exceedingly rare and highly developed Lunate types were made in the same county. Size 4 1/4 x 4 1/2 inches.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 8—DARKE COUNTY, OHIO. Material, banded-slate. Size 4 1/2 x 4 5/8 inches.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 9—FRANKLIN COUNTY, OHIO. Material, banded-slate. Size 4 5/8 x 3 inches.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 10—MIAMI COUNTY, INDIANA. Material, green banded-slate. Size 5 1/4 x 2 5/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

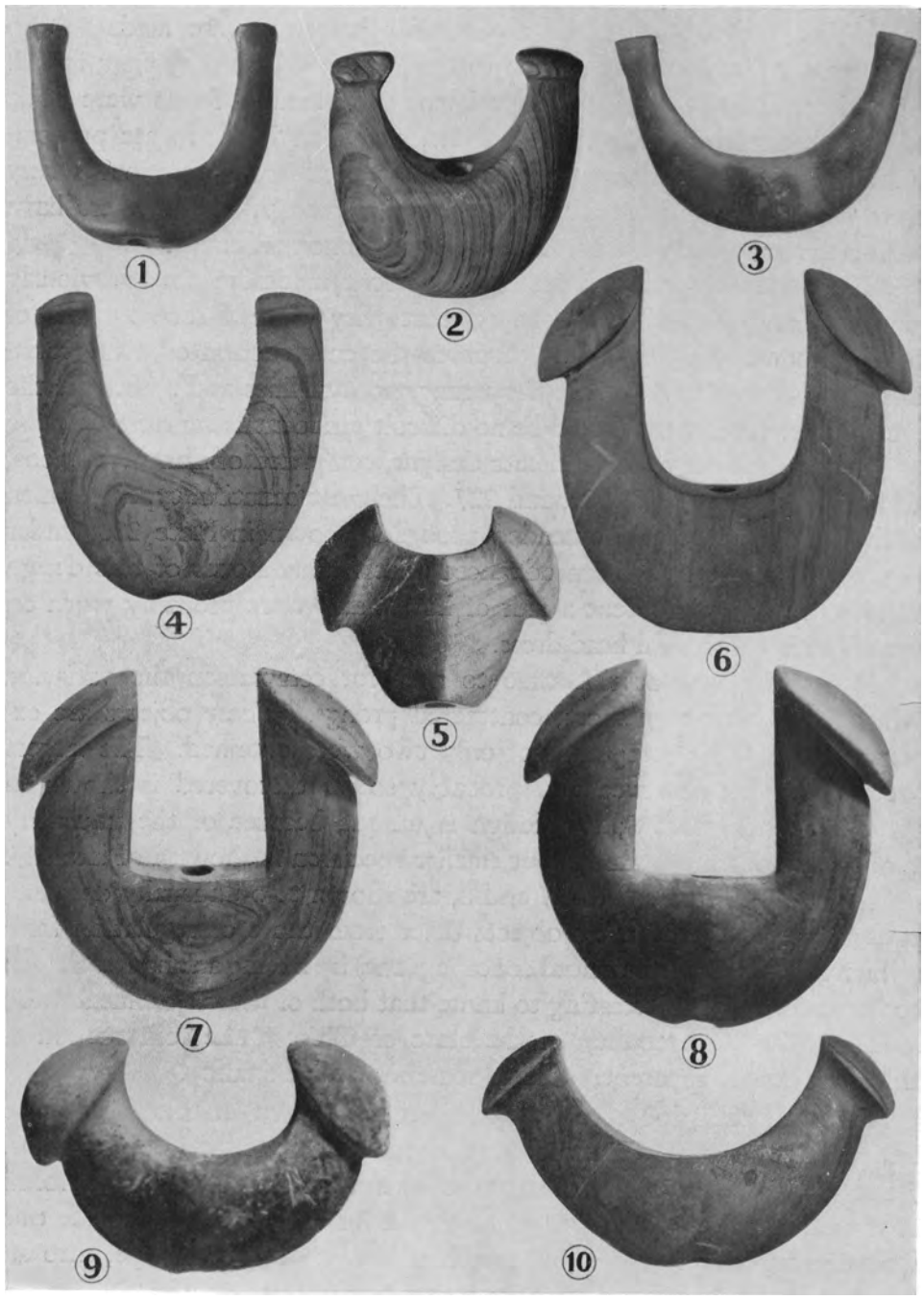


PLATE 227

It is very probable that these particular patterns were made within the Heart Area, and were carried to the locality where they were found.

It is obvious that the type specimens and blending forms were made of no other material but various slates, of which banded slate predominates. The ultimate designs are extremely varied in construction. Many have lengthy extended curved and knobbed prongs, while others have extremely short and contracted prongs with abnormal knobs.

These variations are so radically different in design that previously many offhand might have believed that they were different types of banner-stones. But, after one observes the construction of these variations, one is able to note that the arrangement of lines and planes are the same. Therefore, there should be no difficulty in identifying them.

A large number of the ultimate designs, comprised of many variations, are shown in Plates 225, 226, and 227. The most beautiful type specimen with long and slenderly extended prongs is shown in Plate 226, under No. 6. Theories have been advanced that banner-stones of this design were so made to represent a pair of horns, and were probably worn on some sort of ceremonial head-dress.

It may be well at this time to note for comparison the variation which have extremely short, contracted prongs. These objects are extremely rare and photographs of only two were obtained. The largest specimen so far observed and probably so far discovered is shown in Plate 225 under No. 8; the design is unique because of the unusually abnormal knobs. A similar but smaller specimen is shown in Plate 227.

In Plate 227, under Nos. 7 and 8, are shown two unusually designed patterns. Note that these objects differ from those of regulation form (which have a very pronounced concave plane) by having an angular shaped construction. It is interesting to know that both of these specimens were found in the same county in the state of Ohio. The construction of this variation is apparently due to some individual's fancy.

One can easily observe by the specimen shown in this same plate under No. 6, that its construction is identical to the two objects, Nos. 7 and 8, with the exception of the concave end which is of regulation form. It would, however, have been an easy task for the Indian who made this specimen to convert the plane which is now concave in shape, into an angular shape identical to the two specimens Nos. 7 and 8.

CURVED PICK GROUP

The term *Pick* has been used as a name for these peculiarly designed banner-stones over a period of many years, notwithstanding the fact that the variously shaped patterns are straight or curved in construction. The term *Curved* has been added to the name *Pick* to signify more definitely the shape of these objects, particularly those which are more highly developed.

This group of banner-stones is comprised of two distinct classified types. The one type is the true *Curved Pick, Type No. 23;* the other is the *Single Pronged Pick, Type No. 24.* This article will describe briefly and separately each of these two ultimate designs, as follows:

CURVED PICK

TYPE No. 23

It is very obvious that these particular type specimens were developed within the Heart Area from the *Heart Area Ovate Primary Form No. 7.* The cross-sectional construction of these objects is round; therefore, there should be no need for anyone to classify them inaccurately in the *Lunate Group.*

The early made blending forms are those which are straight in shape, varying greatly in size. Many are very small, while others are exceptionally long. A large number of specimens are shown in Plate 228. The more highly developed blending forms are those which are slightly curved. A number of these are shown in Plate 229.

The type specimens are those which show a more pronounced curve. It is difficult to place a dividing line separating the more highly developed blending forms from the types, because the curvature of the variations is so gradual that they merge together. Therefore, this problem of identifying the variations is left to one's judgment alone. There is, however, one feature which can help one to identify the ultimate designs

from the blending forms. Usually the types are quite large, the curved prongs are more slender, and the workmanship is superior.

The most commonly used material for the making of the specimens of this group was banded-slate. Occasionally, however, one can observe slightly curved blending forms made of tan soapstone. Why this material was used is unknown. Those that have so far been observed, were found in the state of Ohio. It is very probable that Indians of this locality had made many of these patterns from this particular variety of stone for some ceremonial reason. The ceremonial meaning of this stone was probably different from that associated with banded-slate.

A rather large number of blending forms and type specimens are shown in Plate 230. The most highly developed pattern so far observed is shown under No. 8. Note that the design resembles a pair of horns.

These objects comprise two variations. The one variation includes those which are of *bi-face* construction. These are the most common. The other variation includes those which are of *single-face* construction. These are quite rare. Note the two *single-face* variations shown in Plate 230 under No. 4 and No. 5. There is a pronounced raised ridge upon one side of these two specimens running parallel to the perforations. The back surfaces which are not displayed are smooth planes. This *single-face* construction is another convincing point in evidence that these objects were designed so that they could be placed on some sort of ceremonial head-dress, the ridged faces being the sides displayed.

Another interesting feature noted in the specimens which are occasionally encountered is the fluting. These flutes are usually displayed only upon the highly developed curved patterns. They vary in size from one sixteenth to one eighth inch in diameter, and the depth is usually the same dimension as that of the width. The single flute incised on a specimen was made upon the inner curve, extending from each side of the center point of the perforation for at least two-thirds of the length of each prong. The flute on some extend almost to the tip of each prong.

Just why these flutes were made is a difficult problem to solve. It is hardly probable that they were made exclusively for decoration, because the location on the banner-stone where they were placed does not permit them to be displayed to any advantage. Perhaps they were made for some unknown ceremonial reason.

SINGLE PRONGED PICK
TYPE No. 24

It is very obvious that these particular objects are closely related to the *Curved Pick* patterns. The only difference in their construction is the fact that they have but one prong and the perforations through them are oval in shape instead of round. Because of this similarity of construction these patterns have been placed in this group and have been classified as *Single Pronged Pick, Type No. 24.*

Prior to the publication of this volume these particular objects were regarded by many as being a *Geniculate* variation. Mention has been made in the article *Geniculate Group* that there is no evolutionary relationship between that design and the *Single Pronged Pick* design. Whether or not the *Single Pronged Pick* patterns had served the Indians in the same manner as the *Geniculate*, one can not definitely say. Yet, because they have the same oval shaped perforations, one is forced to believe that they were used in the same manner.

It is possible that the design of the *Single Pronged Pick* patterns were accidentally created through breakage. For example: when part of a curved prong of a *Curved Pick* banner-stone was accidentally broken off, it was salvaged by rounding off the damaged end. Naturally, when such a procedure had taken place, the design of the salvaged specimen then resembled to a certain extent the *Geniculate* design. It is very probable that with a little alteration, the round perforation of these salvaged objects was then transformed into an oval shape to correspond with those through the *Geniculate* banner-stones.

There is no doubting that, after the *Single Pronged Pick* design was created, the Indians then made many objects in this shape, which they had probably used in the same manner as the true *Geniculate* patterns, even though no evolutionary relationship between the two designs exists. These objects are quite abundant in certain sections of the Heart Area, and are made of no other material than banded-slate.

A rather large number of these specimens are shown in Plate 232. By comparing their construction to that of the *Curved Pick* patterns, one can note that they are the same. Some of those illustrated appear to be salvaged, while the majority were undoubtedly made in this shape after the design was created.

EXPLANATION OF PLATE 228

CURVED PICK GROUP

Uncurved Blending Forms of Various Banded-slate Materials mainly from the Heart Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—CRAIGHEAD COUNTY, ARKANSAS. Material, ferruginous slate. Found near the town of Jonesboro in 1922. Catalogue number Z-13. Width 2 1/8 inches.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 2—HANCOCK COUNTY, INDIANA. Material, banded-slate. Width 3 1/4 inches.
J. Sutter collection, Fairbury, Illinois

No. 3—CRAWFORD COUNTY, INDIANA. Material, banded-slate. Width 3 1/2 inches.
L. C. Snyder collection, Lacona, New York

No. 4—EATON COUNTY, MICHIGAN. Material, light green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—BURLINGTON COUNTY, NEW JERSEY. Material, slate. Found near the town of Medford. *Dorothy E. Middleton collection, Morristown, New Jersey*

No. 6—BARRY COUNTY, MICHIGAN. Material, green banded-slate, discolored from age.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 7—EATON COUNTY, MICHIGAN. Material, dark green slate, faintly banded.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—PICKAWAY COUNTY, OHIO. Material, dark slate, faintly banded. Catalogue number 248065. Neg. No. 29278, Case 18. Width 7 5/8 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 9—ALLEN COUNTY, INDIANA. Material, light grayish green banded-slate.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 10—SENECA COUNTY, OHIO. Material, green banded-slate. Catalogue number 70.
From the author's collection

No. 11—KENT COUNTY, MICHIGAN. Material, light banded-slate. Length 6 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 12—ERIE COUNTY, NEW YORK. Material, green banded-slate, no evidence of drilling.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 13—OHIO, County unknown. Material, black slate. Catalogue number 36573.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 14—ASHLAND COUNTY, OHIO. Material, blue banded-slate. Catalogue number 3036.
L. C. Snyder collection, Lacona, New York

No. 15—ST. CLAIR COUNTY, ILLINOIS. Material, green banded-slate. Width 2 3/4 inches.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 16—ERIE COUNTY, NEW YORK. Material, green banded-slate. Length, 3 1/2 inches.
Dr. W. A. Pendergast collection, Fairbury, Illinois

No. 17—TUSCARAWAS COUNTY, OHIO. Material, dark banded-slate. Found near the town of New Philadelphia. Catalogue number 138332. Neg. No. 29278.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 18—SPENCER COUNTY, INDIANA. Material, green banded-slate. Length 4 inches.
Thomas J. Dillingham collection, Boonville, Indiana

No. 19—EATON COUNTY, MICHIGAN. Material, green banded-slate. Length 4 1/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

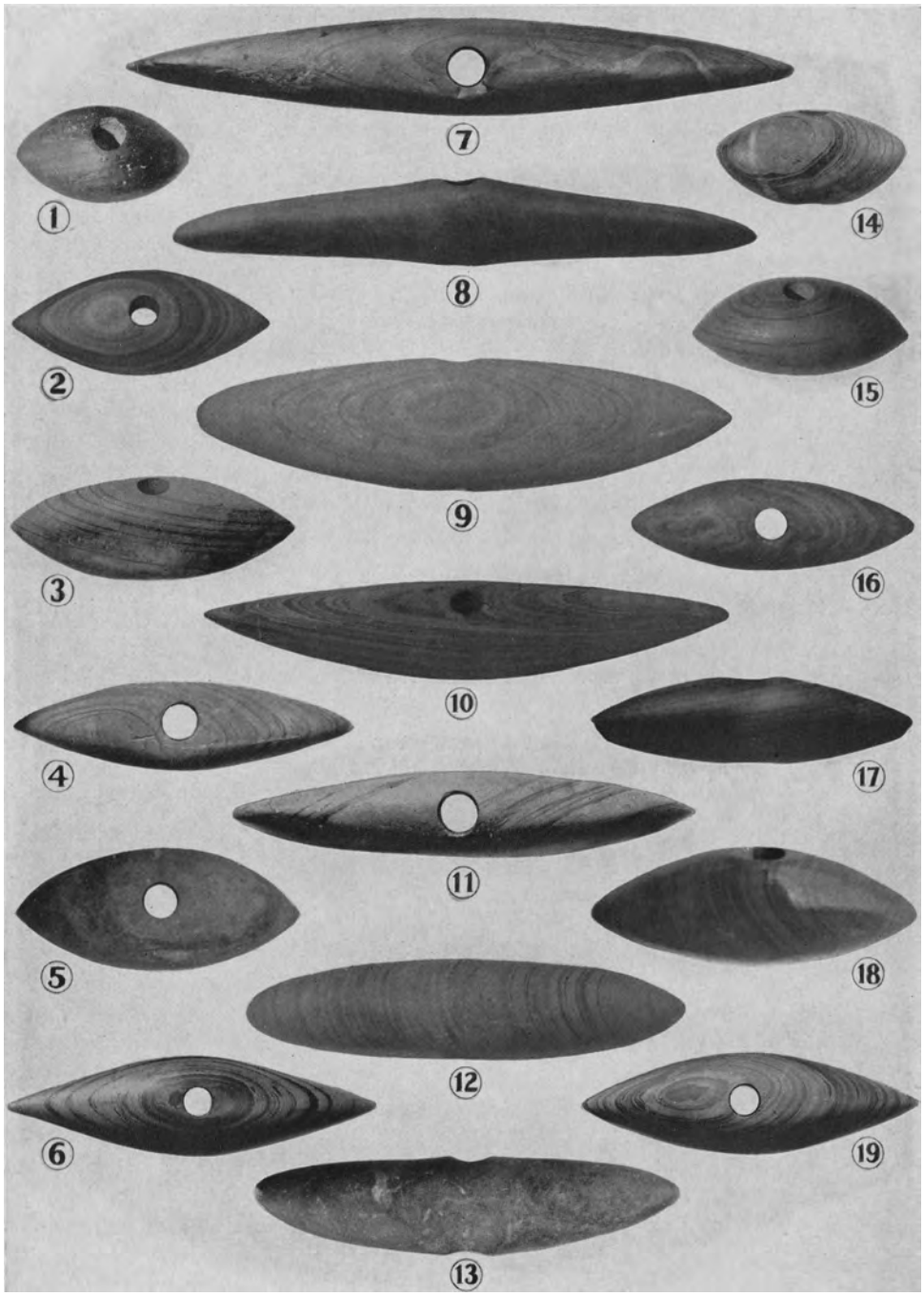


PLATE 228

EXPLANATION OF PLATE 229

CURVED PICK GROUP

Slightly Curved Pick Blending Forms of Various Materials, mainly from the Heart Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—NIAGARA COUNTY, NEW YORK. Material, pagodite or soap stone. Found near the town of Lockport. Catalogue number 13151. Neg. No. 29278. Case 18.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 2—FORD COUNTY, ILLINOIS. Material, tan and brown mottled soap stone. Found near the town of Cullom by J. A. Hecklman in 1888 while digging for a foundation.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 3—DELAWARE COUNTY, OHIO. Material, green banded-slate. Width 4 1/2 inches. Collected by the author. *E. L. Renno collection, St. Charles, Missouri*

No. 4—BROWN COUNTY, ILLINOIS. Material, dark green unbanded-slate with tan spots.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 5—PREBLE COUNTY, OHIO. Material, green banded-slate. Width 5 1/4 inches.
C. C. Benedict collection, Decatur, Illinois

No. 6—MERCER COUNTY, OHIO. Material, mottled tan soap stone. Width, 5 3/4 inches. Catalogue number 42. *From the author's collection*

No. 7—STEUBEN COUNTY, INDIANA. Material, green banded-slate. Found in 1866. Formerly in Leslie Hills collection. Width, 6 3/4 inches.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 8—CHAUTAUQUA COUNTY, NEW YORK. Material, soap stone, mottled with shades of yellowish green, and finely speckled with dark spots. Width 4 1/4 inches.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 9—LICKING COUNTY, OHIO. Material, soap stone mottled with shades of tan, blue and brown, highly polished. Width 4 1/4 inches. Catalogue number 761.
From the author's collection

No. 10—WISE COUNTY, VIRGINIA. Material, green banded-slate. Found near the town of St. Paul. Width 3 1/4 inches. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 11—WEST VIRGINIA, County unknown. Material, data unobtained (probably slate). Catalogue number 56090. Width, 2 3/4 inches.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 12—WAUTAGO COUNTY, NORTH CAROLINA. Material, data unobtained. Catalogue number 88536. Neg No. 24581 E. Width 2 3/4 inches.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 13—HIGHLAND COUNTY, OHIO. Material, green banded-slate.
William M. Cunningham collection, Benton Harbor, Michigan

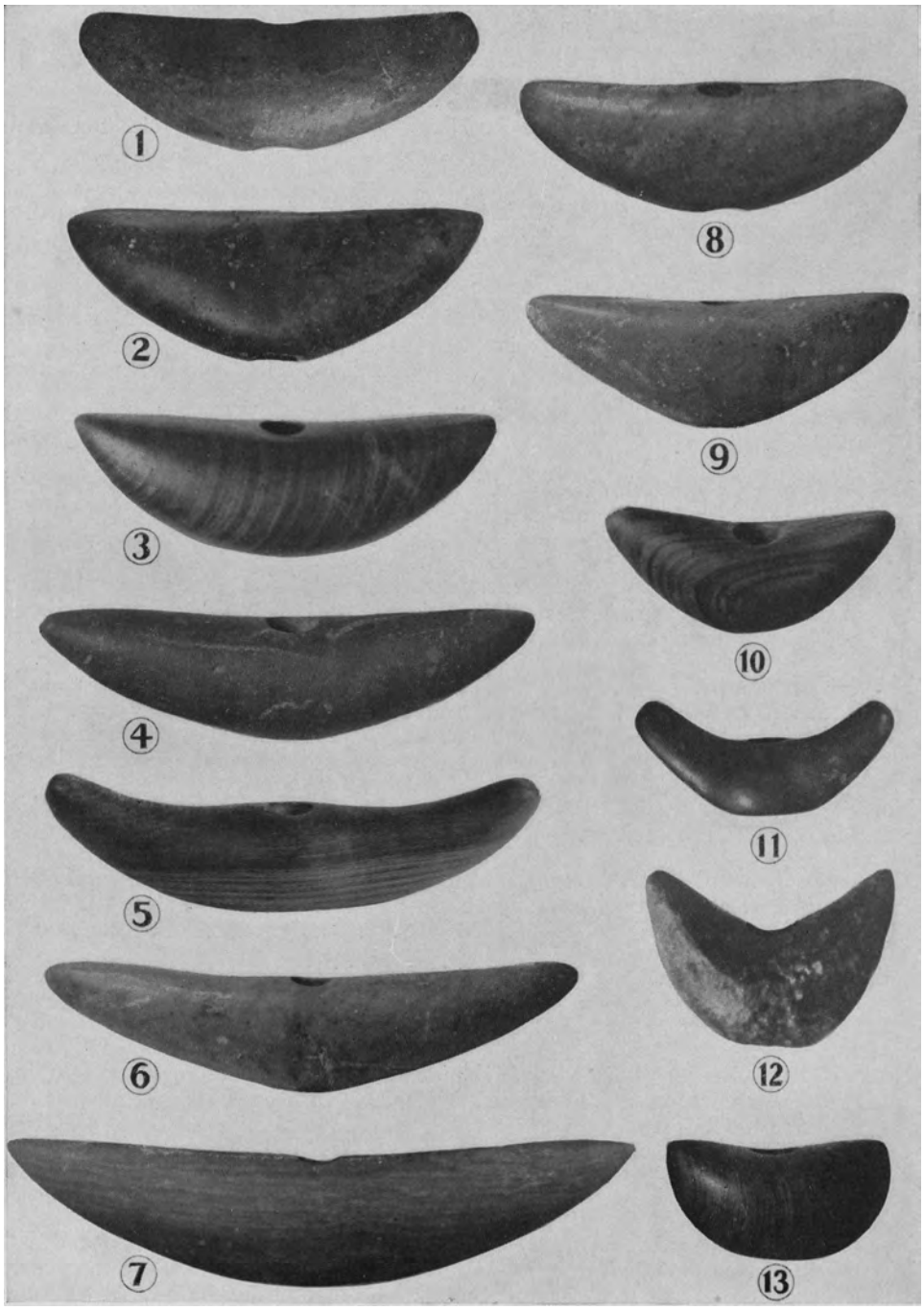


PLATE 229

EXPLANATION OF PLATE 230

CURVED PICK GROUP

Curved Pick Blending Forms and Types No. 23 of Various Slate Materials from the Heart Area

CLASS B AND C SPECIMENS

Plate 5/11 actual size

No. 1—Ashland County, Ohio. Material, dark green slate, discolored from age. Width 3 1/8 inches. Class B specimen.
N. E. Carter collection, Elkhorn, Wisconsin

No. 2—Huron County, Ohio. Material, light banded-slate. Width 3 inches. Class B specimen. *L. C. Snyder collection, Lacona, New York*

No. 3—Butler County, Ohio. Material, slate, faintly banded. Unfinished solid stick drilling 1/2 inch deep. Catalogue number 2822. Class B specimen.
L. C. Snyder collection, Lacona, New York

No. 4—Fairfield County, Connecticut. Material, banded-slate. Found near the town of Fairfield. Neg. Nos. 24581E-11528. Width 7 3/8 inches. Class C specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—Michigan, County unknown. Material, green banded-slate. This is a single-face specimen because of the raised ridge on the face displayed. The surface of the back is smooth. Width, 7 3/4 inches. Catalogue number 72. Class C specimen.
From the author's collection

No. 6—Ohio, County unknown. Material, gray slate, discolored tan from age. Width 7 inches. Class C specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 7—Fountain County, Indiana. Material, blue banded-slate. This specimen is rather unusual and could probably be classified as a Freak. Width 3 1/2 inches. Class C specimen. *C. C. Benedict collection, Decatur, Illinois*

No. 8—Allen County, Indiana. Material, slate, faintly banded. This specimen is extremely highly developed. Width 6 inches. Formerly in the Lesslie Hills collection, Fort Wayne, Indiana. Class C specimen. Present owner unknown.

No. 9—Butler County, Ohio. Material, bluish gray banded-slate, no evidence of drilling. Found near the town of Middletown. Width, 3 3/4 inches. Catalogue number 103. Unfinished. Class C specimen. *Arthur R. Altick collection, Springfield, Ohio*

No. 10—Cass County, Michigan. Material, green banded-slate. Width 4 inches. Catalogue number 76. Class C specimen. *From the author's collection*

No. 11—Eaton County, Michigan. Material, slate, faintly banded, discolored dark brown from age. No evidence of drilling. Width, 9 1/2 inches. Class B specimen.
Donald O. Boudeman collection, Kalamazoo, Michigan

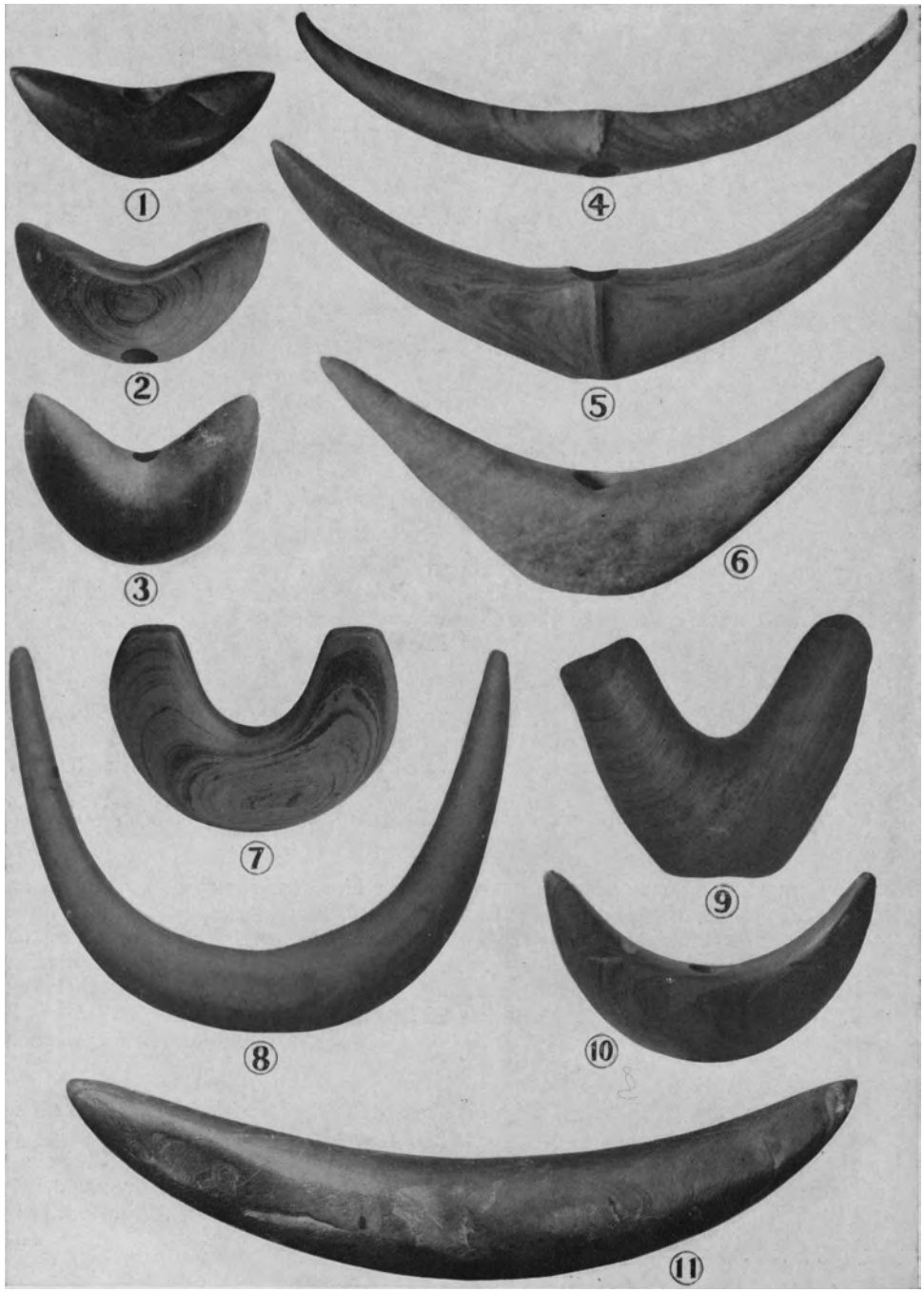


PLATE 230

EXPLANATION OF PLATE 231

CURVED PICK GROUP

Curved Pick Blending Forms and Types No. 23 of Various Materials from the Heart Area

CLASS B AND C SPECIMENS

Plate 5/7 actual size

No. 1—DELAWARE COUNTY, INDIANA. Material, dark greenish gray unbanded-slate. Width, 2 3/8 inches. Class C specimen.
Philip C. Schupp collection, Chicago, Illinois

No. 2—OHIO, County unknown. Material, greenish gray slate, faintly banded and discolored from age. No evidence of drilling. This specimen is rather unusual in construction. Width, 4 inches. Class C specimen.
Philip C. Schupp collection, Chicago, Illinois

No. 3—OGLE COUNTY, ILLINOIS. Material, copper. Found near the town of Oregon. This specimen can be classified as an uncurved Pick pattern. It is one of the three banner-stones made of copper so far discovered. Width, 5 inches. Catalogue number A4207. Class B specimen.
The State Historical Society of Wisconsin collection, Madison, Wisconsin

No. 4—KENTUCKY, County unknown. Material, white quartz, polished. This is an unusually rare specimen because of the fact it is made of quartz. It is the only Pick specimen of its kind observed by the author made of this material and is probably the only one in existence. Width, 5 3/4 inches, thickness, 1 3/4 inches. The perforation is a little over 3/8 of an inch in diameter and was drilled from each end. Formerly in the E. W. Payne collection, Springfield, Illinois. Catalogue number A2921. Class B specimen.
From the author's collection

No. 5—OHIO, County unknown. Material, mottled gray steatite. This specimen is extremely unique because of the material from which it is made. The design is exceptionally highly developed and it is unusually large in size. Width, 6 5/8 inches. Formerly in the E. W. Payne collection, Springfield, Illinois. Class C specimen.
B. W. Stephens collection, Quincy, Illinois

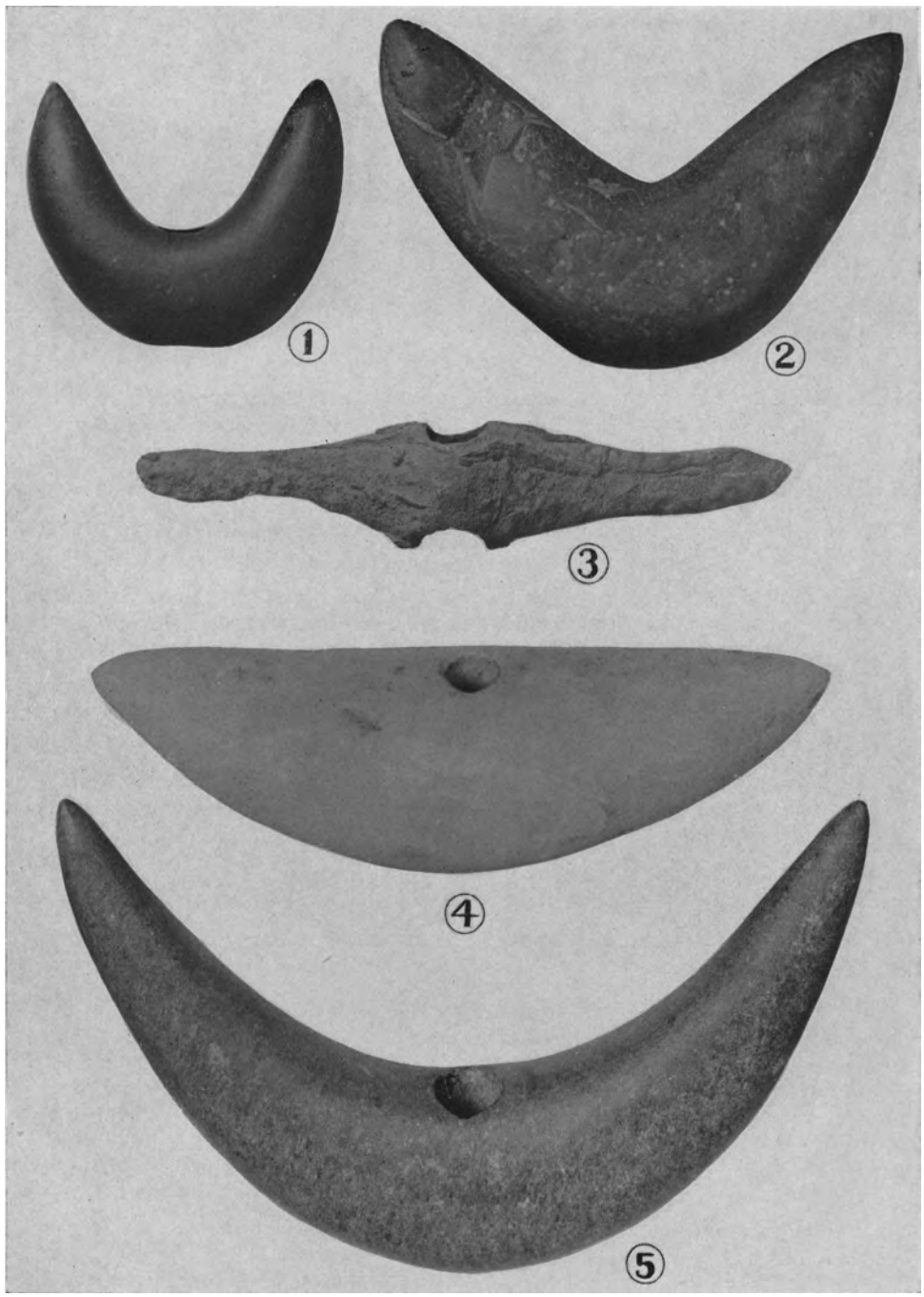


PLATE 231

EXPLANATION OF PLATE 232

CURVED PICK GROUP

Single Pronged Pick Types No. 24 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—OHIO, County unknown. Material, slate, discolored from age. Plate 2. Catalogue number 1/1766. Length 4 1/4 inches.
American Museum of Natural History collection, New York, N. Y.

No. 2—WYANDOT COUNTY, OHIO. Material, green banded-slate. Catalogue number 3007. Length 3 1/2 inches. *L. C. Snyder collection, Lacona, New York*

No. 3—DELAWARE COUNTY, INDIANA. Material, blue banded-slate, large oval perforation. Length 4 3/4 inches. *Dr. Rolland Bunch collection, Muncie, Indiana*

No. 4—HENRY COUNTY, TENNESSEE. Material, green banded-slate. Length 3 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 5—Locality unknown, probably Indiana or Ohio. Material, green slate, faintly banded, and discolored from age. No evidence of drilling. Length 3 1/2 inches.
E. W. Payne collection, Springfield, Illinois

No. 6—LAPEER COUNTY, MICHIGAN. Material, green slate faintly spotted. Found near the town of Goodrich. Catalogue number 361. Length 3 3/4 inches.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 7—LIVINGSTON COUNTY, NEW YORK. Material, blue banded-slate. Length 4 3/8 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 8—MERCER COUNTY, OHIO. Material, dark green unbanded-slate. Found near the town of Fort Recovery. Length 5 inches.
Dr. Rolland Bunch collection, Muncie, Indiana

No. 9—PIKE COUNTY, ILLINOIS. Material, green banded-slate. Length 5 inches.
E. L. Renno collection, St. Charles, Missouri

No. 10—MONTGOMERY COUNTY, OHIO. Material, dark green unbanded-slate. Length 5 3/8 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 11—LAPEER COUNTY, MICHIGAN. Material, banded-slate. Length 3 3/4 inches.
Dr. B. J. Moss collection, East Tawas, Michigan

No. 12—KENTON COUNTY, KENTUCKY. Material, green unbanded-slate. Length 4 1/4 inches. *E. W. Payne collection, Springfield, Illinois*

No. 13—AUGLEIZE COUNTY, OHIO. Material, slate, faintly banded and discolored from age. Length 4 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

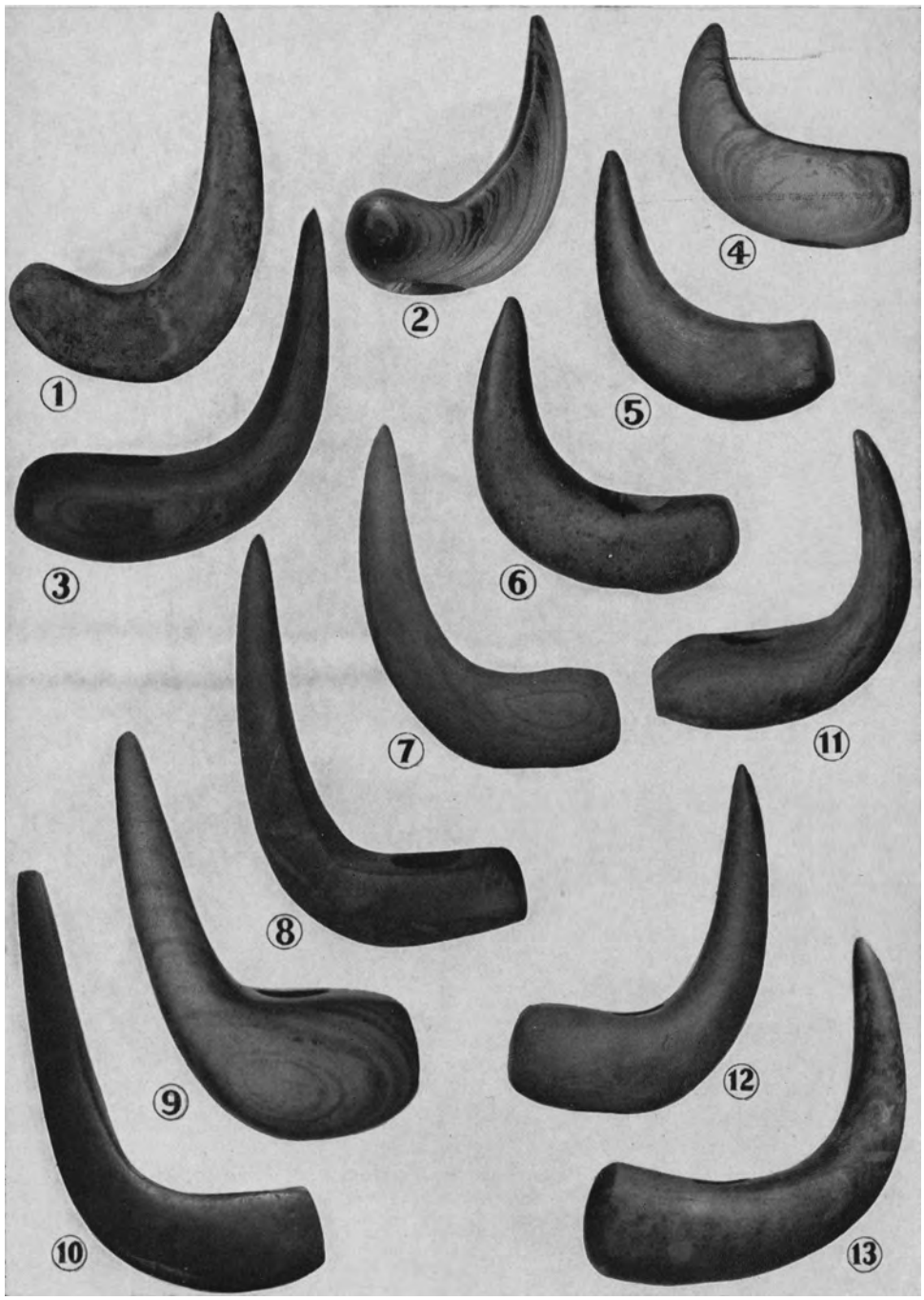


PLATE 232

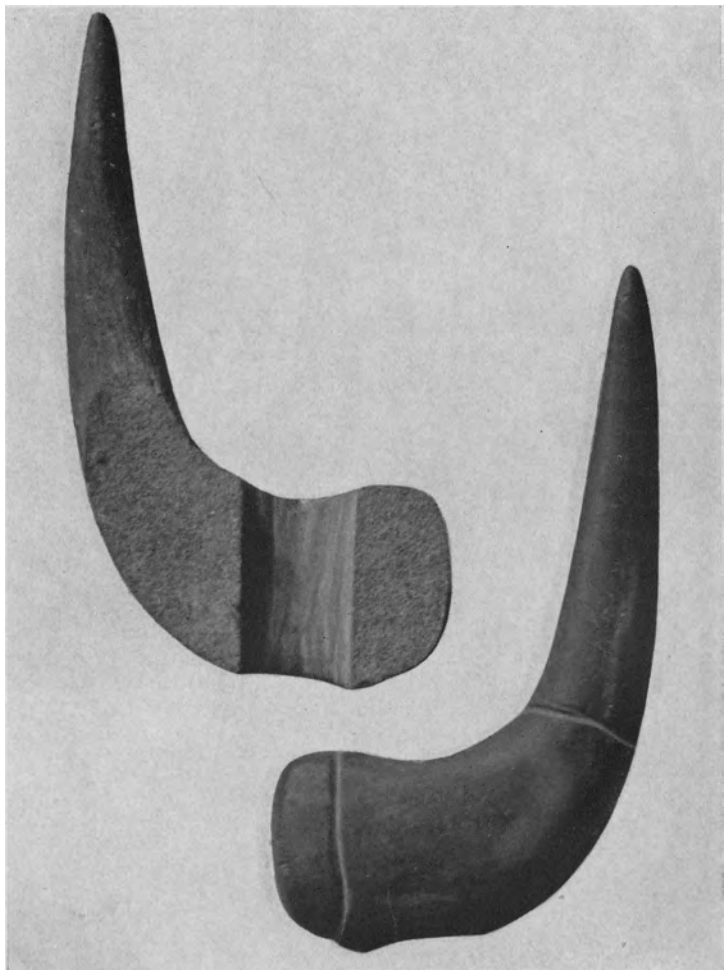


PLATE 233.

Indiana, County unknown. Material, banded-slate. Found near the Wabash River. Two views of a broken Single Pronged Pick pattern which was salvaged by making two grooves in which laid the cords that tied the two pieces to-gether.

Plate actual size. *Donald O. Boudeman collection, Kalamazoo, Michigan*

NOTCHED BUTTERFLY GROUP

The term *Butterfly* has been popularly used as a name for the so-called butterfly-shaped banner-stones by the collectors for many years. This name, however, has been most commonly applied to but two differently designed patterns: the one pattern governs those which occur in the Mississippi Valley and are made of ferruginous quartz; the other pattern governs those which occur in the Heart Area and are made of banded-slate.

Naturally, because these two patterns were previously classified by the same name, there was a great need for more definite terms by which these two butterfly designs could be identified. This situation has been rectified in a very simple manner by adding to the name *Butterfly*, the term *Quartz*, to identify the specimens from the Mississippi Valley, and the term *Double Notched*, to identify those from the Heart Area.

The double-notched patterns of banded-slate are comprised of two variations which are so radically different in construction that it has been necessary to classify each of the ultimate variations as types. Although these two types are constructed differently the general shape of the wings correspond. Therefore, it is very obvious that the two designs are closely related. This article will describe briefly and separately each of these types, as follows:

DOUBLE NOTCHED BUTTERFLY

TYPE No. 25

Much has already been said in a number of chapters in this volume about these particular banner-stones. There is left but little to say. Mention has been made concerning the evolution of the design, the possibility that the design was created through breakage, the theory that these objects were symbolic effigies of the butterfly, and the simple manner by which the variations can be classified by the *A, B, C system*.

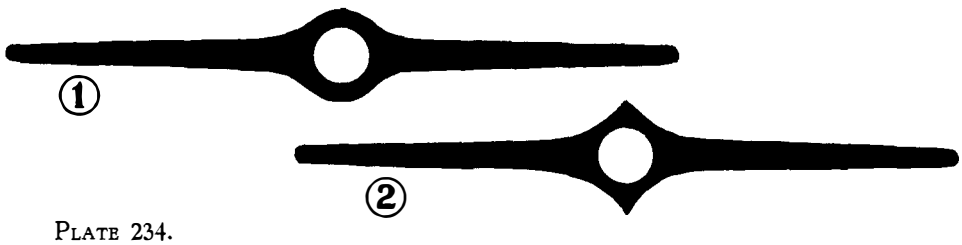


PLATE 234.

Cross-sectional drawing showing the variation in construction of the type specimens.
No. 1—The reinforced area of this variation is rounded.
No. 2—The reinforced area of this variation is shaped into a sharp ridge, running parallel with the perforation.

The ultimate patterns were developed from the *Heart Area Ovate Primary Form No. 7*. Because of the fact that the primary forms, blending forms, and type specimens abundantly occur within the Heart Area, it is certain that this group had developed within this area.

It is obvious that all of the variations which were developed through evolution were made of various slate materials. The most commonly used variety being that of banded-slate.

Plate 235 and 236 illustrate a large number of the primary forms. One can note from those shown that they vary greatly in size. The two largest specimens so far observed are shown under No. 8 in the one plate and under No. 1 in the other plate.

Plate 237 and 238 illustrate a large number of the unnotched blending forms, which are very interesting because they show the first step toward a higher development by having thin and well shaped wings.

Plate 239 and 240 illustrate a large number of the single-notched blending forms. These objects are rarer than the ultimate patterns. Some of the specimens shown might have originally been unnotched forms that were damaged by the inserted staffs, and which were then salvaged by transforming the damaged end into a well formed notch. The majority, however, were undoubtedly made in this shape after the design was created.

Plate 241, 242, 243, and 244 illustrate a number of the double-notched type specimens, which are comprised of two variations. The one variation governs those which have a rounded reinforced area through the middle for the perforation; the other variation governs those which have a ridged reinforced area. It is probable that the variations with the rounded reinforced areas were designed prior to those which are ridged.

Plate 244 is exceptionally interesting because it is composed of a number of the smallest and the largest specimens encountered. Note that No. 1 and several that follow are so small that they appear to be too insignificant to be regarded as ceremonial symbols. In the chapter *Degeneration of Cultures* is mentioned the possibility that such objects, particularly those poorly made, were made by declining cultures. Note that Nos. 9 and 10 are exceptionally large and show superb workmanship.

UNDRILLED NOTCHED BUTTERFLY

TYPE No. 26

By comparing the shape of the wings of these patterns with those which have perforations, one can note that the construction of both designs is very much the same. It is very apparent that the patterns which have no perforations were made as copies from those which were drilled. For this reason one can believe that the undrilled patterns were made later. Furthermore, both of the variations occur within the same area; the undrilled specimens, however, are less widely distributed.

These objects show two variations in construction. The one variation has a groove on each face running through the middle from notch to notch, while the planes of the faces of the other variations are smooth. It is probable that these objects were inserted in the ends of split staffs and were then firmly fastened with cord or sinew.

Plate 246 and 247 illustrate a large number of these objects from which one can study the construction of the variations. The largest and most beautifully made specimen so far observed is shown in Plate 247 under No. 1.

Plate 247 illustrates two objects of flint which are designed similar to those of slate. The one flint specimen No. 3 was found in the area in which the slate patterns occur rather abundantly, and for that reason there is a possibility that this object was used as a banner-stone. The classification of the other flint object No. 2 is questionable because it was found a great distance west of the area in which the slate patterns occur. There is a possibility that this object was carried from the area in which those of slate occur to the locality in which it was found.

EXPLANATION OF PLATE 235

NOTCHED BUTTERFLY GROUP

Primary Forms No. 7 of Various Banded-slate Materials from the Heart Area

CLASS A SPECIMENS

Plate 2/5 actual size

No. 1—Morrow County, Ohio. Material, light blue banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 2—Holmes County, Ohio. Material, light blue banded-slate. Found near the town of Millersburg.
Phillip C. Schupp collection, Chicago, Illinois

No. 3—Outagamie County, Wisconsin. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 5—Huron County, Ohio. Material, green banded-slate. Found near the town of Mansfield.
Phillip C. Schupp collection, Chicago, Illinois

No. 4—Wisconsin, County unknown. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 6—Mc Henry County, Illinois. Material, blue banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 7—Wisconsin, County unknown. Material, blue banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 8—Noble County, Indiana. Material, black banded-slate. This is the largest specimen of this kind observed by the writer. Size 8 x 2 1/4 inches.
From the author's collection

No. 9—Knox County, Ohio. Material, blue banded-slate. Found near the town of Mt. Vernon.
Phillip C. Schupp collection, Chicago, Illinois

No. 10—Wisconsin, County unknown. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 11—Huron County, Ohio. Material, light blue banded-slate. Found near the town of Mansfield.
Phillip C. Schupp collection, Chicago, Illinois

No. 12—Auglaize County, Ohio. Material, green banded-slate. Found in Moulton Twp.
Phillip C. Schupp collection, Chicago, Illinois

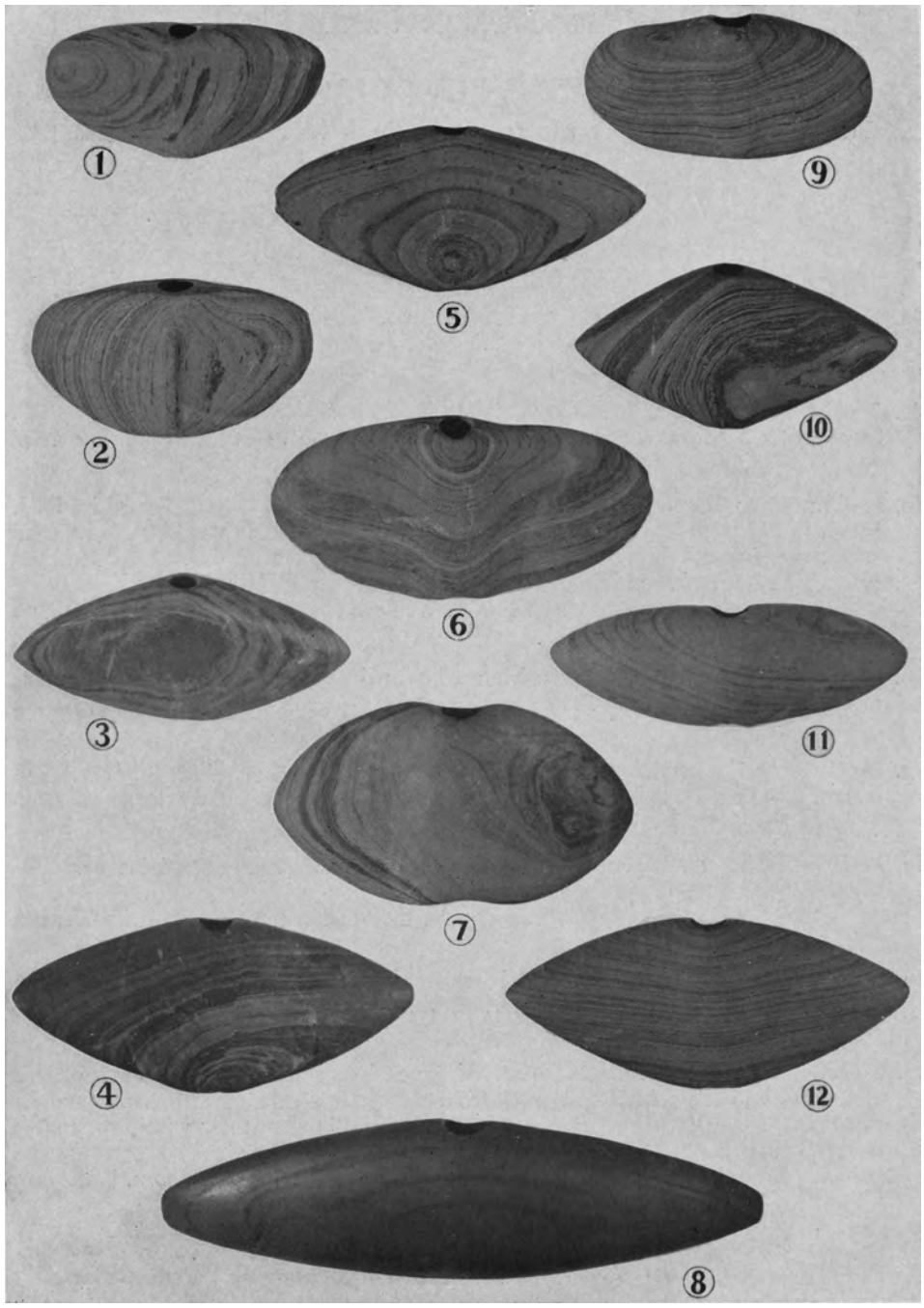


PLATE 235

EXPLANATION OF PLATE 236

NOTCHED BUTTERFLY GROUP

Primary Forms No. 7 of Various Banded-slate Materials from the Heart Area

CLASS A SPECIMENS

Plate 1/2 actual size

No. 1—CHENANGO COUNTY, NEW YORK. Material, blue banded-slate. Size 7 x 2 3/4 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 2—CLINTON COUNTY, KENTUCKY. Material, blue banded-slate. Found in 1927. Size 5 1/4 x 2 inches. Catalogue number 66. *From the author's collection*

No. 3—CHENANGO COUNTY, NEW YORK. Material, green banded-slate. Found by R. J. Busch in Norwick Twp. in district 13 in 1859. The drilling was done by a solid stick from each end, but were so poorly directed that the conical shaped depressions pass each other in the middle and do not meet. Size 6 x 2 3/4 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 4—WILLIAMSON COUNTY, ILLINOIS. Material, green banded-slate. Found on the surface near the town of Herrin in 1883. *Irvin Peithman collection, Carbondale, Illinois*

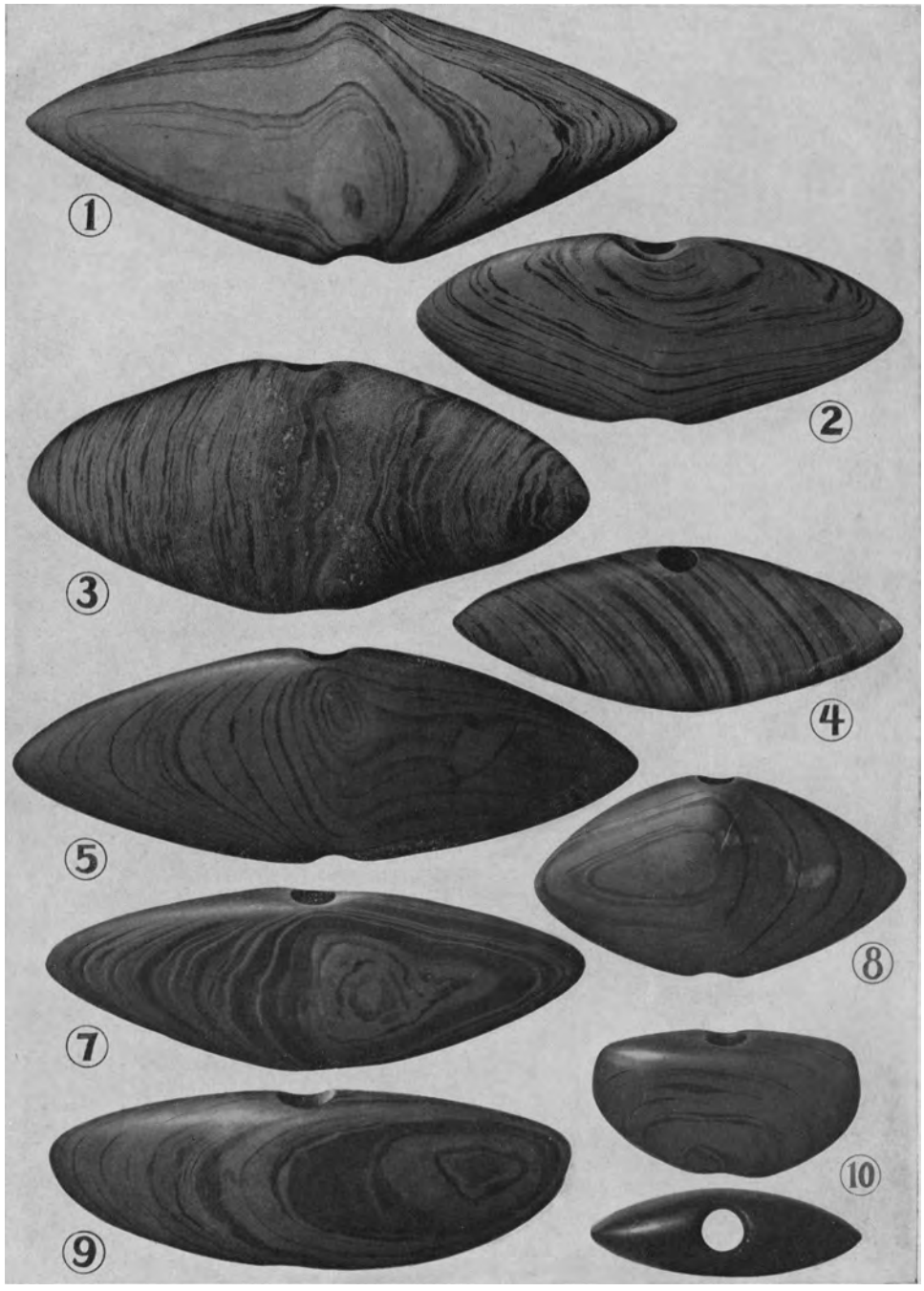
No. 5—DECATUR COUNTY, INDIANA. Material, blue banded-slate. Size 6 3/4 x 2 3/8 inches. Catalogue number 628. *From the author's collection*

No. 7—WHITE COUNTY, ILLINOIS. Material, blue banded-slate. Size 6 x 2 inches. Catalogue number 730. Collected by the author. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 8—LIVINGSTON COUNTY, ILLINOIS. Material, banded-slate, discolored brown from age. Size 4 1/4 x 2 1/4 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 9—LAWRENCE COUNTY, OHIO. Material, green banded-slate. The drilling of this specimen was done with a solid stick from each end and the conical shaped depressions are one-half inch in diameter at the ends, but in the center where they meet the opening is but 3/16 inch in diameter. Catalogue number 606. Collected by the author. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 10—MONROE COUNTY, ILLINOIS. Material, dark brownish black banded-slate, highly polished. Size 2 7/8 x 1 5/8 inches, 7/8 inch thick. Collected by the author. *Dr. A. W. Pendergast collection, Fairbury, Illinois*



PLATE

EXPLANATION OF PLATE 237

NOTCHED BUTTERFLY GROUP

Primary Forms No. 7 and Unnotched Blending Forms of Various Banded-slate Materials from the Heart Area

CLASS A AND B SPECIMENS

Plate 5/12 actual size

No. 1—Locality unknown. Material, light banded-slate. Size 2 3/4 x 1 3/4 inches. Primary form. Class A specimen. *From the author's collection*

No. 2—KENTUCKY, County unknown. Material, banded-slate. Size 4 1/2 x 1 1/2 inches. Catalogue number 28033. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 3—WEST VIRGINIA, County unknown. Material, banded-slate. It is very probable that this specimen was carried from the Heart Area to the locality where it was found. Size 4 1/2 x 2 inches. Catalogue number 15503. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 4—OHIO, County unknown. Material, dark green banded-slate, discolored from age, highly polished. Size 4 1/4 x 2 1/4 inches. Class B specimen.
C. C. Sisk collection, Sidney, Indiana

No. 5—GENESEE COUNTY, MICHIGAN. Material, light banded-slate, disintegrated and bleached to a grayish white from age. Collected by the author. Size 4 3/4 x 3 inches. Class A specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 6—WISCONSIN, County unknown. Material, green banded-slate. Size 5 1/4 x 3 inches. Class A specimen. *Logan Museum, Beloit College collection, Beloit, Wisconsin*

No. 7—ALLEN COUNTY, INDIANA. Material, green banded-slate, discolored from age. The surface shows evidence of pecking, and only part of the edges show evidence of grinding. Collected by the author. Size 7 x 2 3/8 inches. Class B specimen.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 8—FRANKLIN COUNTY, MISSOURI. Material, green banded-slate, beautifully marked. Found near the town of Washington. Size 6 1/2 x 2 inches. Class B specimen.
G. O. Goessling collection, Webster Groves, Missouri

No. 9—BLACKFORD COUNTY, INDIANA. Material, green slate, faintly banded. Size 6 x 2 3/4 inches. Class B specimen. *Dr. Rolland Bunch collection, Muncie, Indiana*

No. 10—OHIO, County unknown. Material, banded-slate, discolored from age. Catalogue number 20617. Size 5 3/4 x 3 1/8 inches. Class B specimen.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 11—TENNESSEE, County unknown. Material, dark banded-slate. Size 5 1/4 x 3 1/8 inches. Class B specimen.
Logan Museum, Beloit College collection, Beloit, Wisconsin

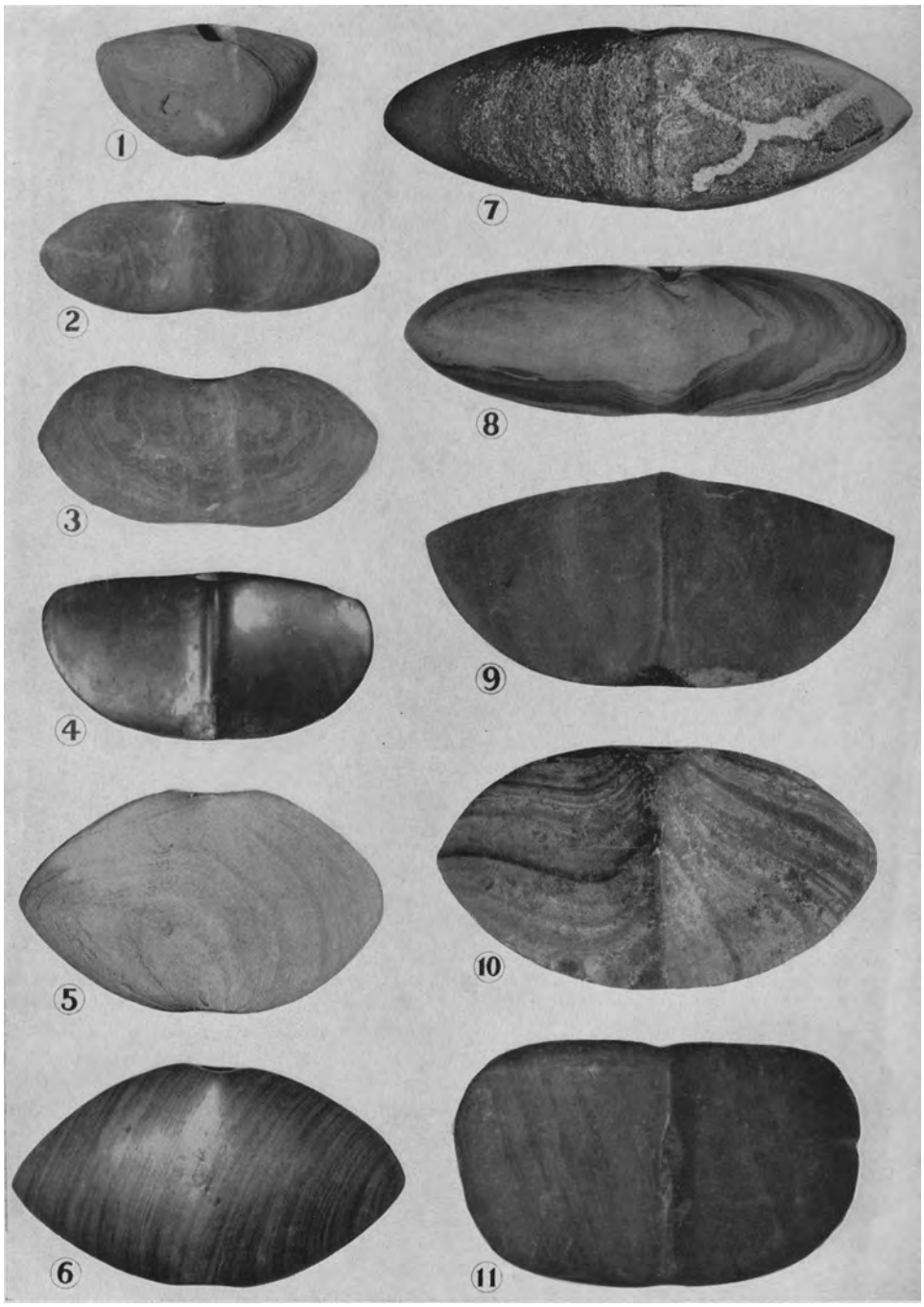


PLATE 237

EXPLANATION OF PLATE 238

NOTCHED BUTTERFLY GROUP

Unnotched Blending Forms of Various Banded-slate Materials from the Heart Area

CLASS B SPECIMENS

Plate 2/5 actual size

No. 1—MARION COUNTY, ILLINOIS. Material, blue banded-slate. Found in Long Creek Twp. *G. C. Benedict collection, Decatur, Illinois*

No. 2—MORGON COUNTY, INDIANA. Material, green banded-slate. Size 5 inches wide. Catalogue number 453. *From the author's collection*

No. 3—HANCOCK COUNTY, OHIO. Material, green banded-slate, surface polished. Size 5 1/2 inches wide. Catalogue number 674. *From the author's collection*

No. 4—WILLS COUNTY, INDIANA. Material, blue banded-slate, discolored brown from age. Formerly in the Leslie Hill collection, Fort Wayne, Indiana. Catalogue number 87. *From the author's collection*

No. 5—HILLSDALE COUNTY, MICHIGAN. Material, light blue banded-slate. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 6—WASHINGTON COUNTY, MISSOURI. Material, green banded-slate. Found in 1908. This specimen was undoubtedly carried to this state from the Heart Area. *From the author's collection*

No. 7—FRANKLIN COUNTY, OHIO. Material, green banded-slate. This specimen shows exceptional workmanship and is of extraordinary size. Size 7 3/4 x 2 1/2 inches. *Ohio State Archaeological and Historical Society Museum collection, Columbus, Ohio*

No. 8—ST. CHARLES COUNTY, MISSOURI. Material, green banded-slate. Found near the town of Elm Point. This specimen is interesting because of the fact it was found in the state of Missouri and was undoubtedly carried there from the Heart Area. Size 7 x 2 3/4 inches. *E. L. Renno collection, St. Charles, Missouri*

No. 9—DARKE COUNTY, OHIO. Material, green banded-slate. *Ohio State Archaeological and Historical Society Museum collection, Columbus, Ohio*

No. 10—ST. CHARLES COUNTY, MISSOURI. Material, blue banded-slate. Found near the town of Elm Point. This specimen was undoubtedly carried to this state from the Heart Area. *E. L. Renno collection, St. Charles, Missouri*

No. 11—DELAWARE COUNTY, INDIANA. Material, dark green unbanded slate. *Dr. Rolland Bunch collection, Muncie, Indiana*

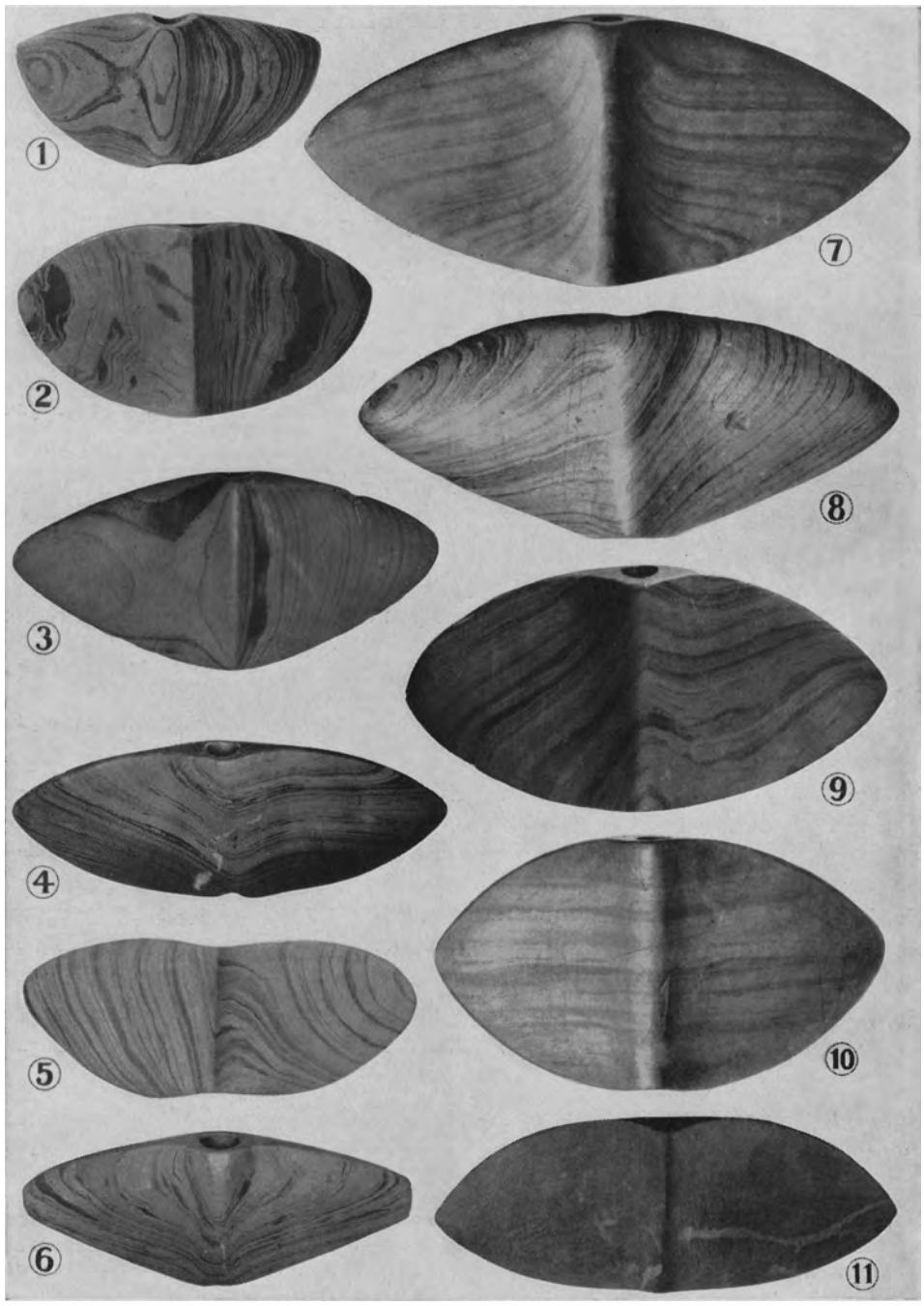


PLATE 238

EXPLANATION OF PLATE 239

NOTCHED BUTTERFLY GROUP

Single Notched Blending Forms of Various Banded-slate Materials from the Heart Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—De Kalb County, Indiana. Material, blue banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—Branch County, Michigan. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 3—Crawford County, Ohio. Material, green banded-slate.
N. E. Carter collection, Elkhorn, Wisconsin

No. 4—Kalamazoo County, Michigan. Material, green banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 5—Berrien County, Michigan. Material, green banded-slate. Found in Pipestone Twp. This specimen was found broken in two.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 6—Indiana, county unknown. Material, banded-slate. Catalogue number D/M/1173, Plate No. 2. *American Museum of Natural History collection, New York, N. Y.*

No. 7—Kent County, Michigan. Material, blue banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—Monroe County, Michigan. Material, light banded-slate, badly disintegrated from age. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—Van Buren County, Michigan. Material, banded-slate badly disintegrated and discolored brown from age. Apparently part of one wing of this specimen was broken off and part of the other wing was sawed off to correspond.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

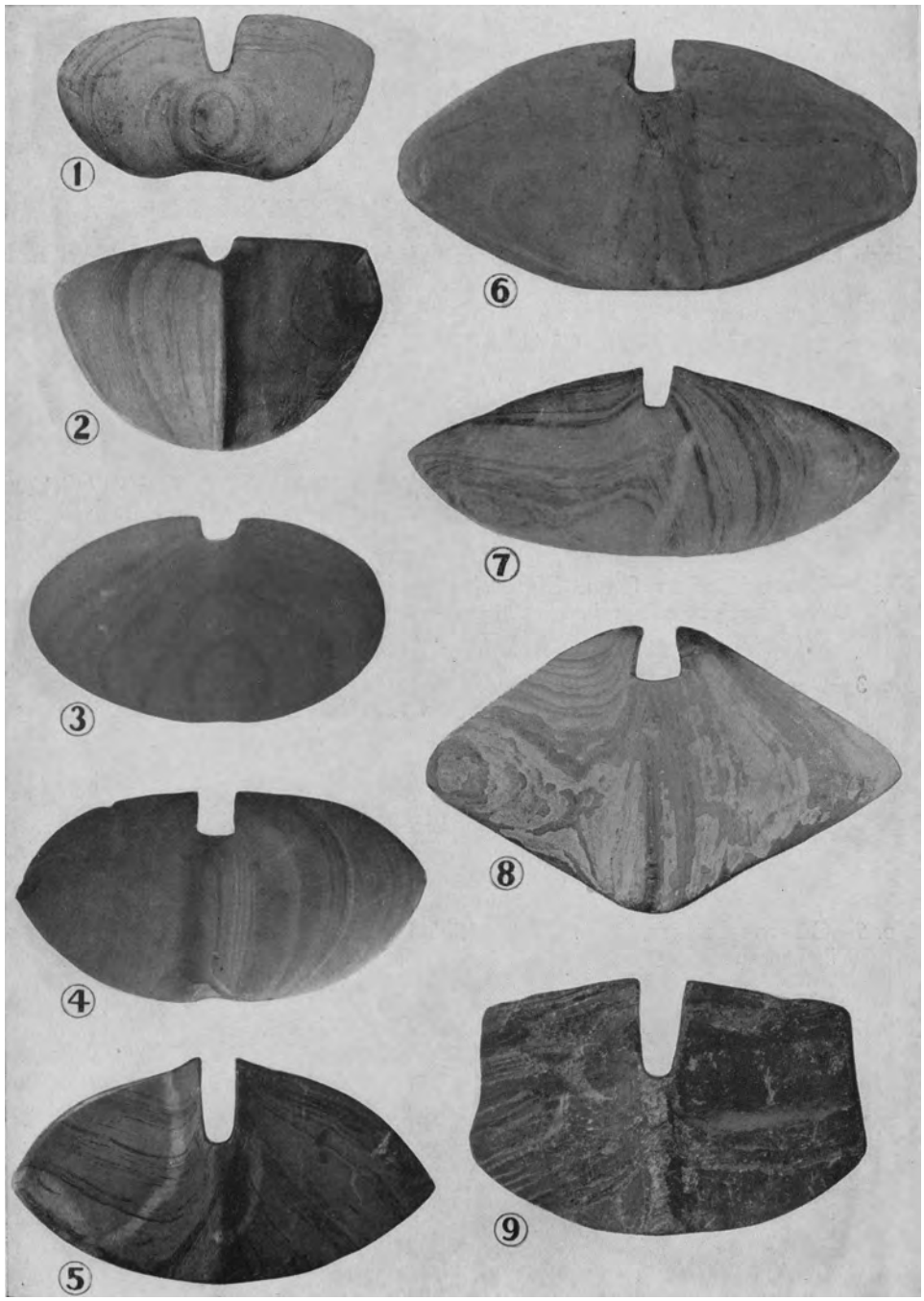


PLATE 239

EXPLANATION OF PLATE 240

NOTCHED BUTTERFLY GROUP

Single Notched Blending Forms of Various Banded-slate Materials from the Heart Area

CLASS B SPECIMENS

Plate 1/2 actual size

No. 1—HARDIN COUNTY, OHIO. Material, plain banded-slate. Size 6 1/2 x 3 1/8 inches.
Ohio State Archaeological and Historical Society Museum collection, Columbus, Ohio

No. 2—HARDIN COUNTY, OHIO. Material, green banded-slate.
Ohio State Archaeological and Historical Society Museum collection, Columbus, Ohio

No. 3—DODGE COUNTY, WISCONSIN. Material, banded-slate.
Logan Museum Beloit College collection, Beloit, Wisconsin

No. 4—ST. CHARLES COUNTY, MISSOURI. Material, green banded-slate. Found near the town of Elm Point. This specimen is interesting because of the fact it was found in the state of Missouri, and was undoubtedly carried there from the Heart Area.
E. L. Renno collection, St. Charles, Missouri

No. 5—CLINTON COUNTY, OHIO. Material, blue banded-slate. Found near the town of Wilmington.
B. W. Stephens collection, Quincy, Illinois

No. 6—WILLIAMS COUNTY, OHIO. Material, blue banded-slate.
N. E. Carter collection, Elkhorn, Wisconsin

No. 7—HARDIN COUNTY, OHIO. Material, plain unbanded-slate.
Ohio State Archaeological and Historical Society Museum collection, Columbus, Ohio

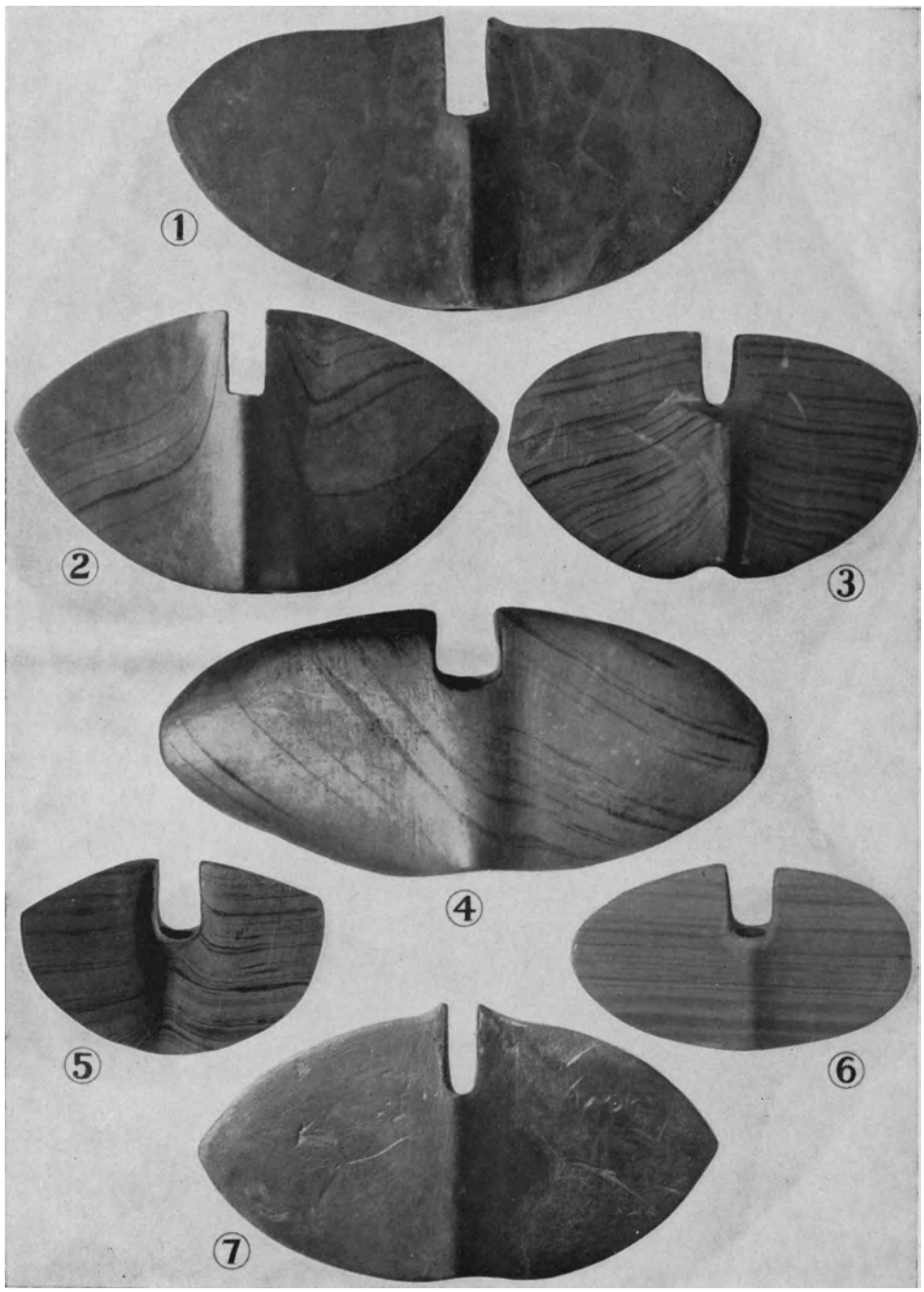


PLATE 240

EXPLANATION OF PLATE 241

NOTCHED BUTTERFLY GROUP

Double Notched Butterfly Types No. 25 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—KENTUCKY, County unknown. Size 2 5/8 x 1 5/8 inches.
G. I. Groves collection, Chicago, Illinois

No. 2—ALLEN COUNTY, OHIO. Found near the town of Lima.
Philip C. Schupp collection, Chicago, Illinois

No. 3—MICHIGAN, County unknown. Weathered from age.
Philip C. Schupp collection, Chicago, Illinois

No. 4—RICHLAND COUNTY, OHIO. Found near Mansfield, material brownish colored slate.
Philip C. Schupp collection, Chicago, Illinois

No. 5—GENESEE COUNTY, MICHIGAN. Discolored brown from age.
Philip C. Schupp collection, Chicago, Illinois

No. 6—ST. CLAIR COUNTY, ILLINOIS. Size 5 1/8 x 2 7/8 inches.
Philip C. Schupp collection, Chicago, Illinois

No. 7—WALWORTH COUNTY, WISCONSIN. Material, blue banded-slate. Found 1/4 mile of west end of Delavan Lake. Formerly in the N. E. Carter collection.
Con Foster Museum collection, Traverse City, Michigan

No. 8—MADISON COUNTY, INDIANA. Size 6 x 2 7/8 inches.
Philip C. Schupp collection, Chicago, Illinois

No. 9—OHIO, County unknown. Material, light gray banded-slate. Incompleted perforation drilled 3/4 inch deep by solid stick. Size 5 3/4 x 3 3/4 inches.
Philip C. Schupp collection, Chicago, Illinois

No. 10—INDIANA, County unknown. Found in 1897. Size 7 1/8 x 3 1/2 inches.
Philip C. Schupp collection, Chicago, Illinois

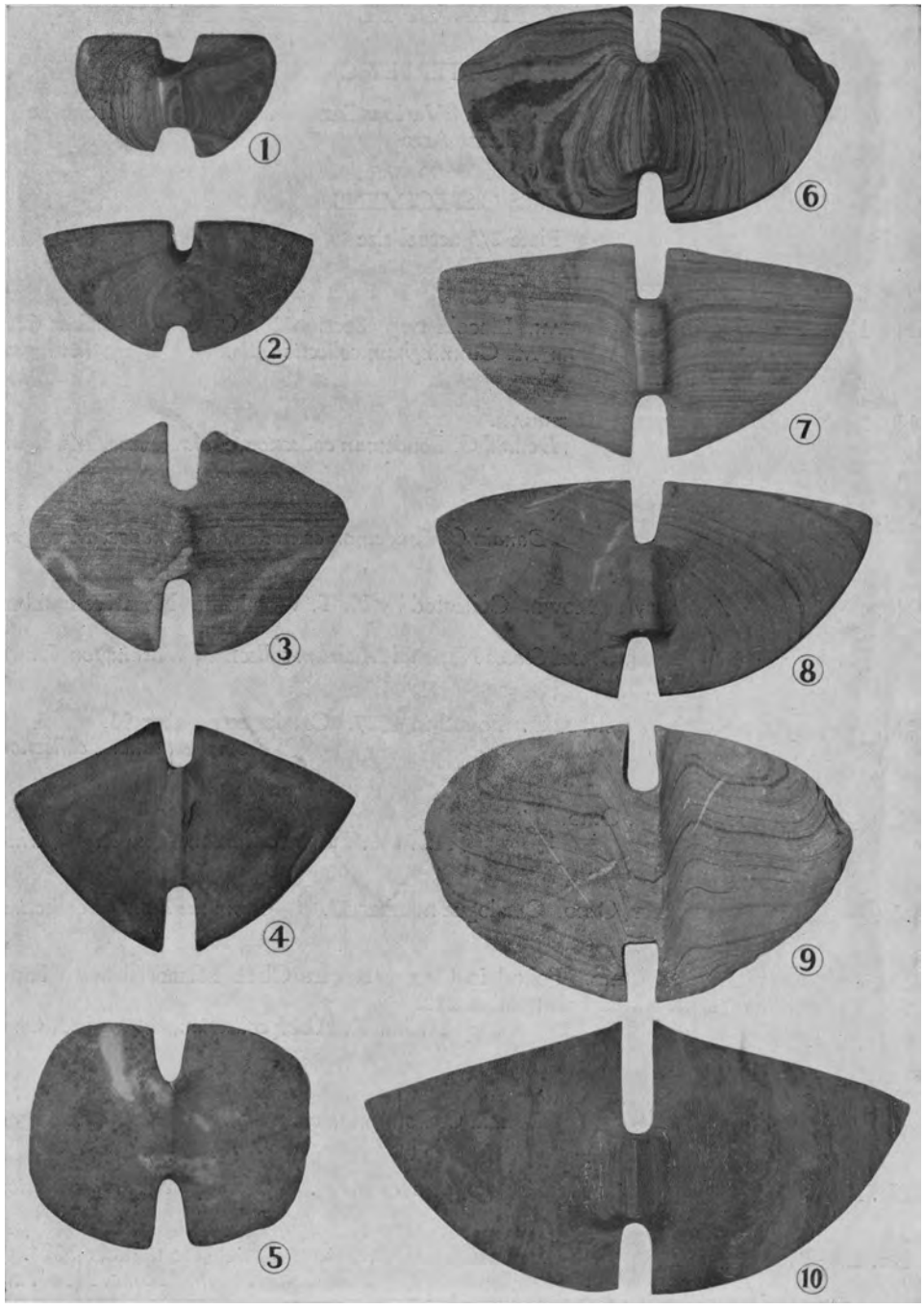


PLATE 241

EXPLANATION OF PLATE 242

NOTCHED BUTTERFLY GROUP

Double Notched Butterfly Types No. 25 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—BERRIEN COUNTY, MICHIGAN. Lincoln twp. Section 26. Catalogue number 621.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 2—VAN BUREN COUNTY, MICHIGAN.
Donald O. Boudeman collection, Kalamaozoo, Michigan

No. 3—BARRY COUNTY, MICHIGAN.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—MICHIGAN, County unknown. Collected by H. T. Woodman. Negative number 24581G-42519.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—CLINTON COUNTY, KENTUCKY. Found in 1927. Catalogue number 93.
From the author's collection

No. 6—WYANDOT COUNTY, OHIO.
Albin A. Elchert collection, New Riegel, Ohio

No. 7—DELAWARE COUNTY, OHIO. Catalogue number 52. *From the author's collection*

No. 8—CLARK COUNTY, OHIO. Found in George Rogers Clark Memorial State Park. Perforation absent. Catalogue number 212.
Arthur R. Altick collection, Springfield, Ohio

No. 9—STEUBEN COUNTY, INDIANA.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 10—CLARK COUNTY, INDIANA. Catalogue number 95. *From the author's collection*

No. 12—RICHLAND COUNTY, OHIO. Material, brown slate. Catalogue number 3024.
L. C. Snyder collection, Lacona, New York

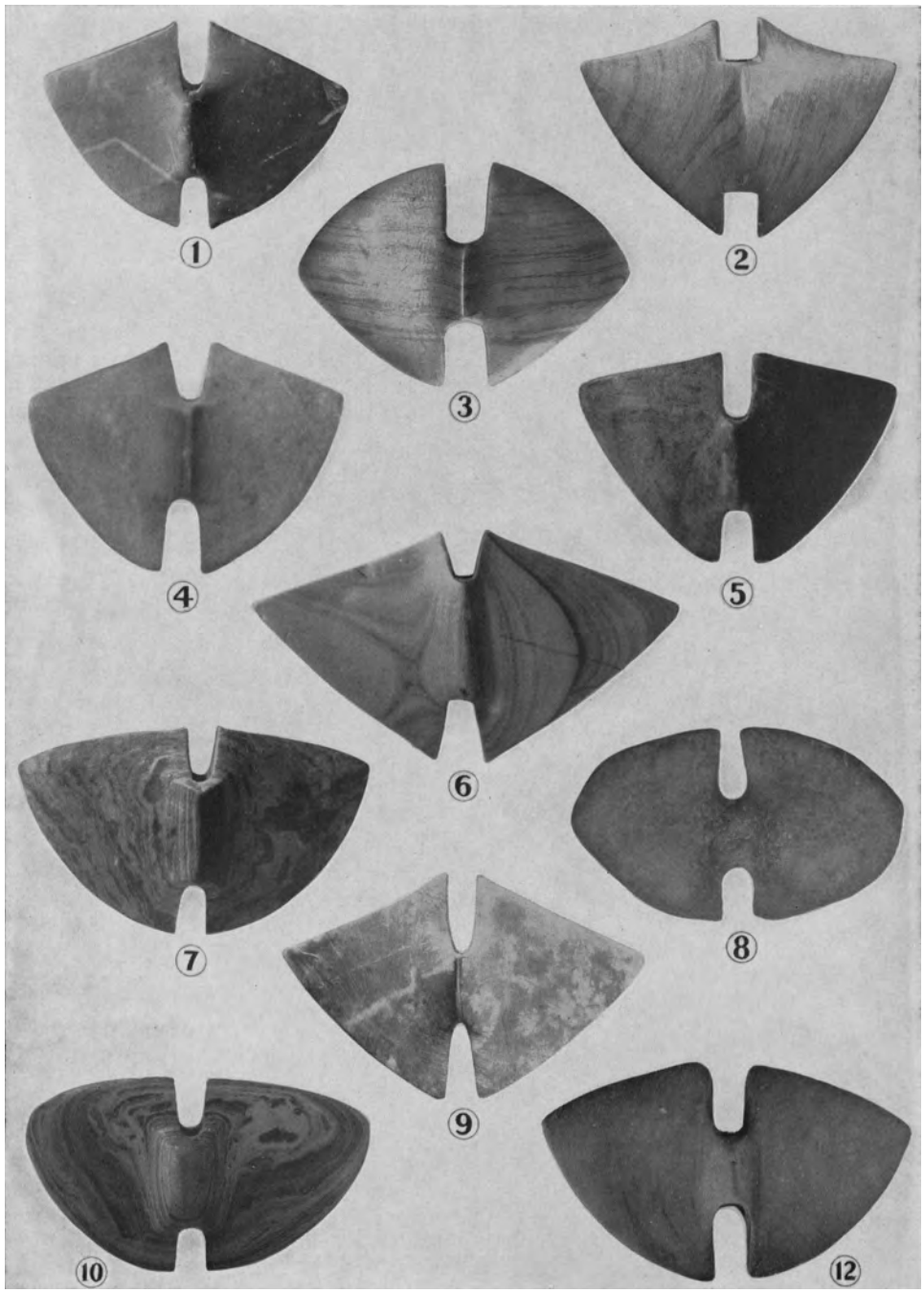


PLATE 242

EXPLANATION OF PLATE 243

NOTCHED BUTTERFLY GROUP

Double Notched Butterfly Types No. 25 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/5 actual size

No. 1—KENT COUNTY, MICHIGAN. Material, green banded-slate. This type specimen is one of the smallest the writer has observed. Width 2 1/2 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—DUBOISE COUNTY, INDIANA. Material, green banded-slate, discolored from age.
B. W. Stephens collection, Quincy, Illinois

No. 3—KENT COUNTY, MICHIGAN. Material, purplish banded-slate. Width 2 3/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—OHIO, County unknown. Material, banded-slate. Catalogue number 25476.
Peabody Museum of Harvard University collection, Cambridge, Massachusetts

No. 5—INDIANA, County unknown. Material, green banded-slate.
Late Leslie Hill collection, Fort Wayne, Indiana

No. 6—ST. JOSEPH COUNTY, INDIANA. Material, blue banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 7—BERRIEN COUNTY, MICHIGAN. Material, banded-slate, discolored brown from age. Found near the town of Boroda.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 8—VERMILLION COUNTY, ILLINOIS. Material, green banded-slate.
Dr. A. W. Pendergast collection, Fairbury, Illinois

No. 9—PICKAWAY COUNTY, OHIO. Material, green banded-slate. Perforation absent. Found near the town of Circleville. Note that the wing to the left shows pecking, and the wing to the right shows considerable grinding and polishing. This unfinished specimen is the largest of its kind the writer has observed. Width 9 1/2 in.
Claude U. Stone collection, Peoria, Illinois

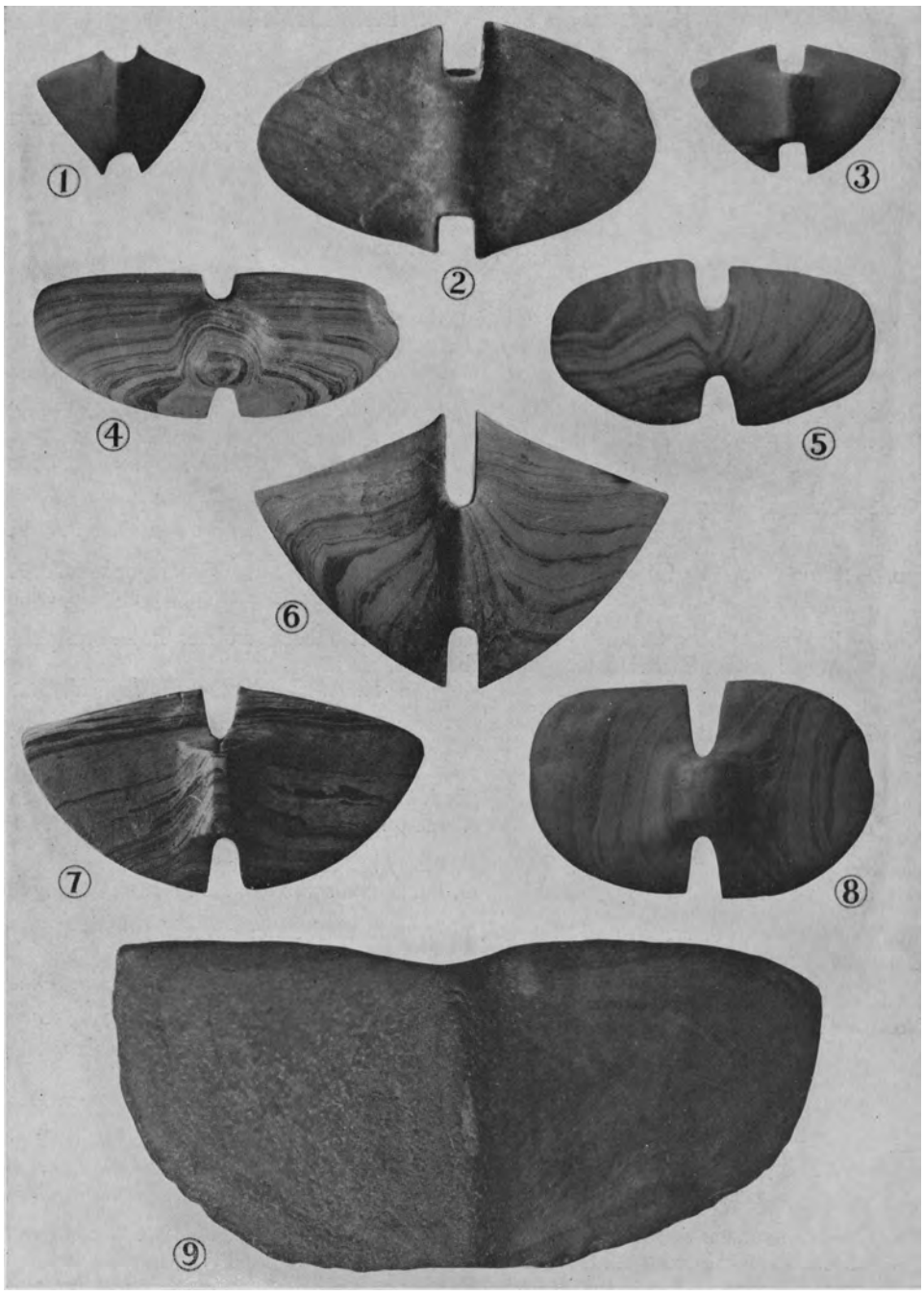


PLATE 243

EXPLANATION OF PLATE 244

NOTCHED BUTTERFLY GROUP

Types No. 25 of Various Banded-Slate Materials from the Heart Area. This plate shows some of the smallest and largest specimens that the writer has observed

CLASS C SPECIMENS

Plate 3/8 actual size

No. 1—WARREN COUNTY, OHIO. Material, dark greenish gray unbanded slate. Size 1 15/16 x 1 1/2 inches. Catalogue number 123.
Arthur R. Altick collection, Springfield, Ohio

No. 2—DELAWARE COUNTY, OHIO. Material, blue banded-slate, highly polished. Found near the town of Warrensburg, near the Scioto River. Catalogue number 89.
Arthur R. Altick collection, Springfield, Ohio

No. 3—OHIO, County unknown. Material, banded-slate. Catalogue number T/1243.
American Museum of Natural History collection, New York, N. Y.

No. 4—UNION COUNTY, OHIO. Material, bluish gray unbanded slate. Catalogue number 3.
Arthur R. Altick collection, Springfield, Ohio

No. 5—PREBLE COUNTY, OHIO. Material, hard compact unbanded slate. Found near the town of Fort St. Clair. Catalogue number 108.
Arthur R. Altick collection, Springfield, Ohio

No. 6—CLARK COUNTY, INDIANA. Material, green banded-slate. Catalogue number 2905.
L. C. Snyder collection, Lacona, New York

No. 7—BUTLER COUNTY, OHIO. Material, brown slate, supposed to have been taken from a mound. Catalogue number 2343. *L. C. Snyder collection, Lacona, New York*

No. 8—ALLEN COUNTY, INDIANA. Material, green banded-slate, covered with a heavy coat of patina. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—HURON COUNTY, OHIO. Material, plain unbanded slate, covered with a heavy coat of patina. Size 8 x 3 3/4 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 10—WARREN COUNTY, OHIO. Material, green banded-slate, faintly banded, and discolored from age. This specimen is exceptionally large and shows remarkable workmanship. Size 8 x 5 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 11—TUSCARAWAS COUNTY, OHIO. Material, green banded-slate, discolored from age. Size 7 x 4 1/2 inches.
Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 12—MONTGOMERY COUNTY, OHIO. Material, dark green banded-slate. Found ten miles west of the town of Dayton. Size 6 1/2 x 4 inches.
Dr. Rolland Bunch collection, Muncie, Indiana

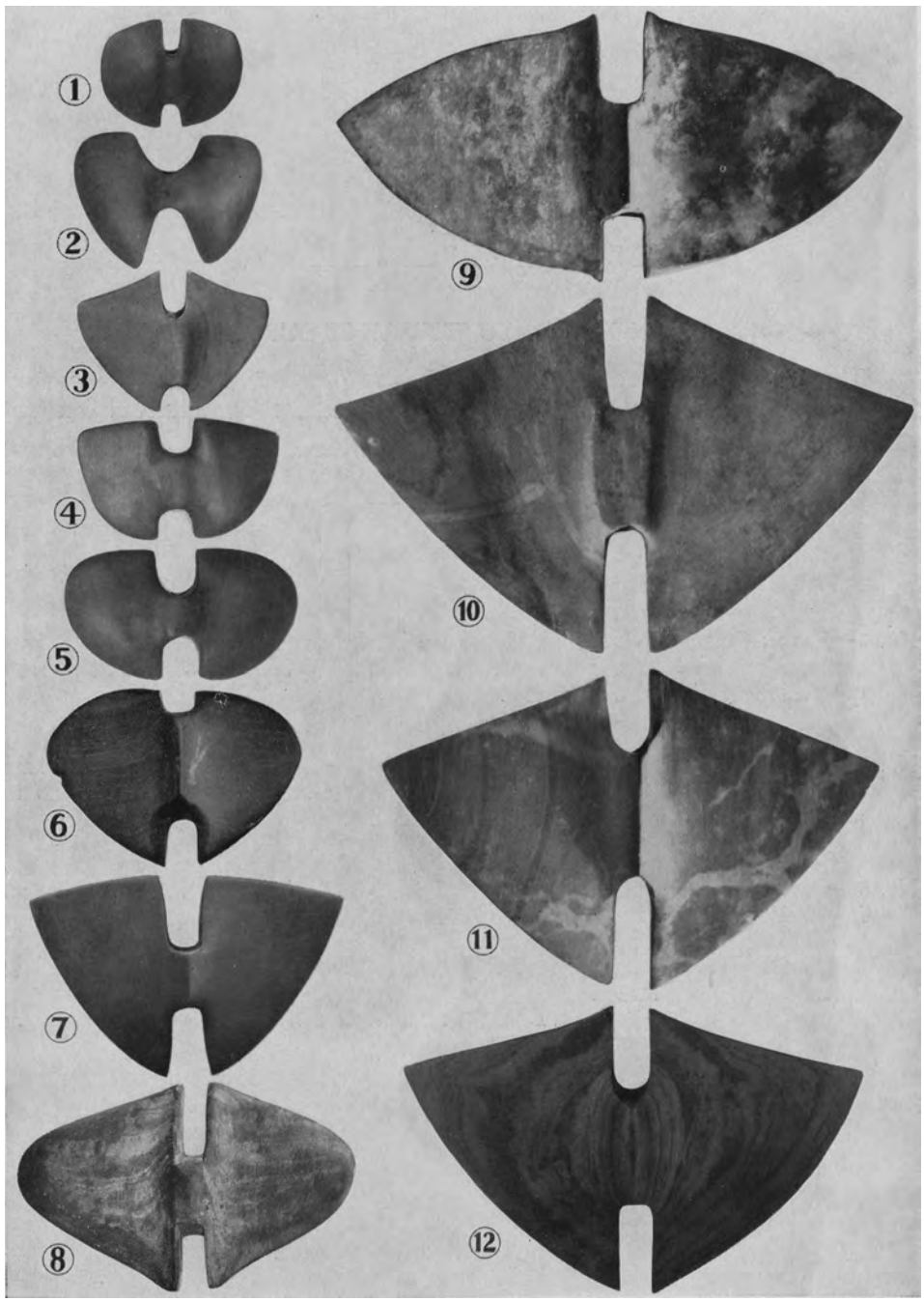


PLATE 244

EXPLANATION OF PLATE 245

NOTCHED BUTTERFLY GROUP

The unfinished specimens illustrated in this plate show the various procedures taken in the manufacture of the Double Notched Butterfly patterns. These three objects were apparently made from quarried material.

UNFINISHED SPECIMENS

Plate 4/11 actual size

No. 1—EATON COUNTY, MICHIGAN. Material, banded-slate. Note that this specimen shows pecking which was done after it was chipped into the desired shape from quarried material. Size 8 x 4 inches.

No. 2—EATON COUNTY, MICHIGAN. Material, banded-slate. Note that this specimen shows pecking, and also a considerable amount of grinding or scraping, but no attempt was made to make notches. Size 8 x 4 inches.

No. 3—CALHOUN COUNTY, MICHIGAN. Material, banded-slate. This specimen is very interesting because it shows very plainly the four distinct techniques that were usually employed in the manufacture of the ultimate patterns of this group. Note that it plainly shows chipping, pecking, grinding or scraping, and the sawing of the notches. Size 7 x 5 inches.

Donald O. Boudeman collection, Kalamazoo, Michigan

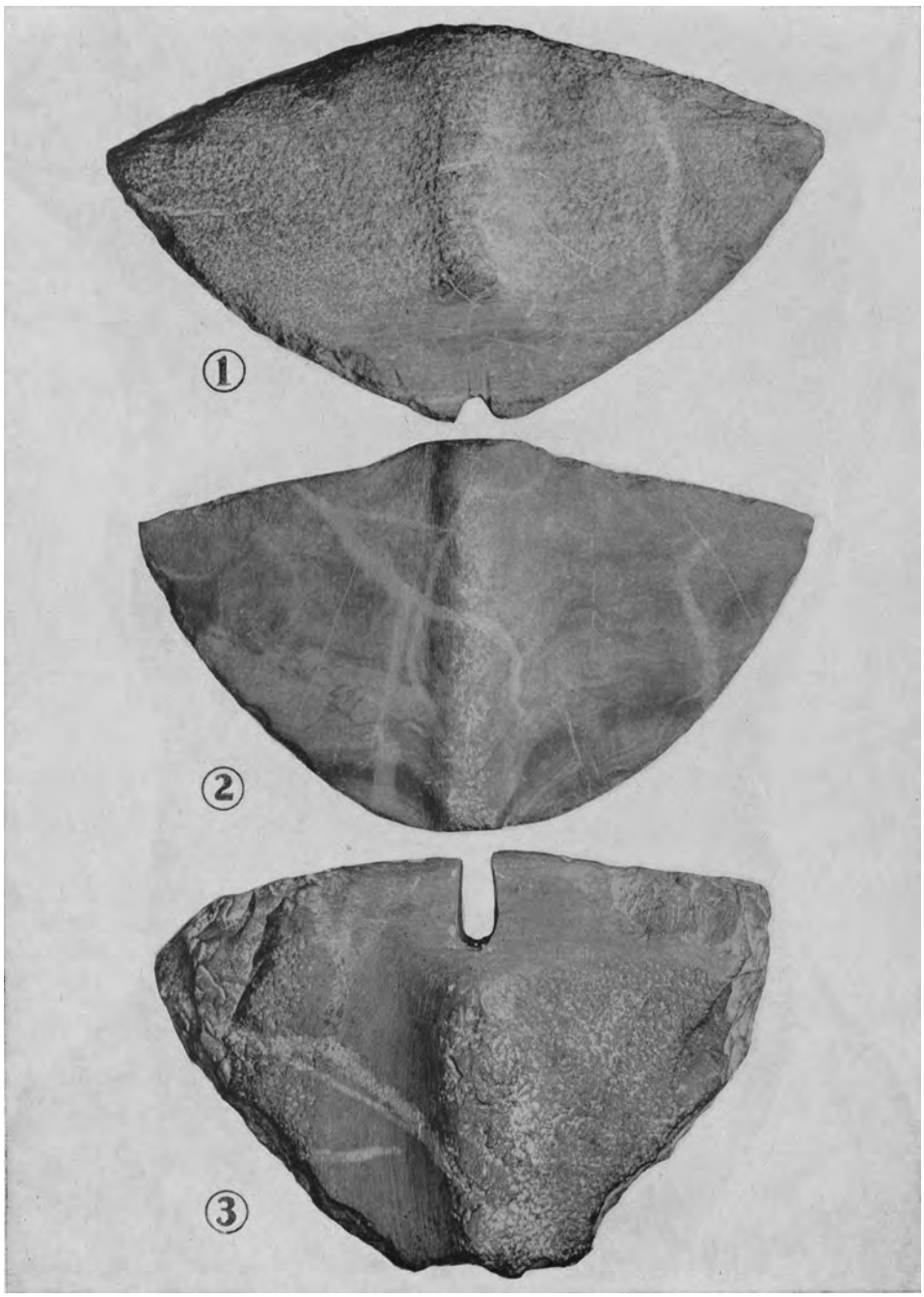


PLATE 245

EXPLANATION OF PLATE 246

NOTCHED BUTTERFLY GROUP

Undrilled Notched Butterfly Types No. 26 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 5/8 actual size

No. 1—DELAWARE COUNTY, INDIANA. Material, green banded-slate. Size 4 3/8 x 2 3/8 inches. Catalog number 791. *From the author's collection*

No. 2—INGHAM COUNTY, MICHIGAN. Material, blue banded-slate. Size 3 3/8 x 2 3/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 3—INDIANA, County unknown. Material, dark green banded-slate. Size 5 x 3 inches. Formerly in the N. E. Carter collection.
Con Foster Museum collection, Traverse City, Michigan

No. 4—VAN BUREN COUNTY, MICHIGAN. Material, green faintly banded-slate. Found near the town of Lawrence. Size 4 1/8 x 2 5/8 inches. Catalogue number 219.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 5—MONTCALM COUNTY, MICHIGAN. Material, purple unbanded-slate. Found near White Fish Lake. Size 4 1/2 x 3 inches.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

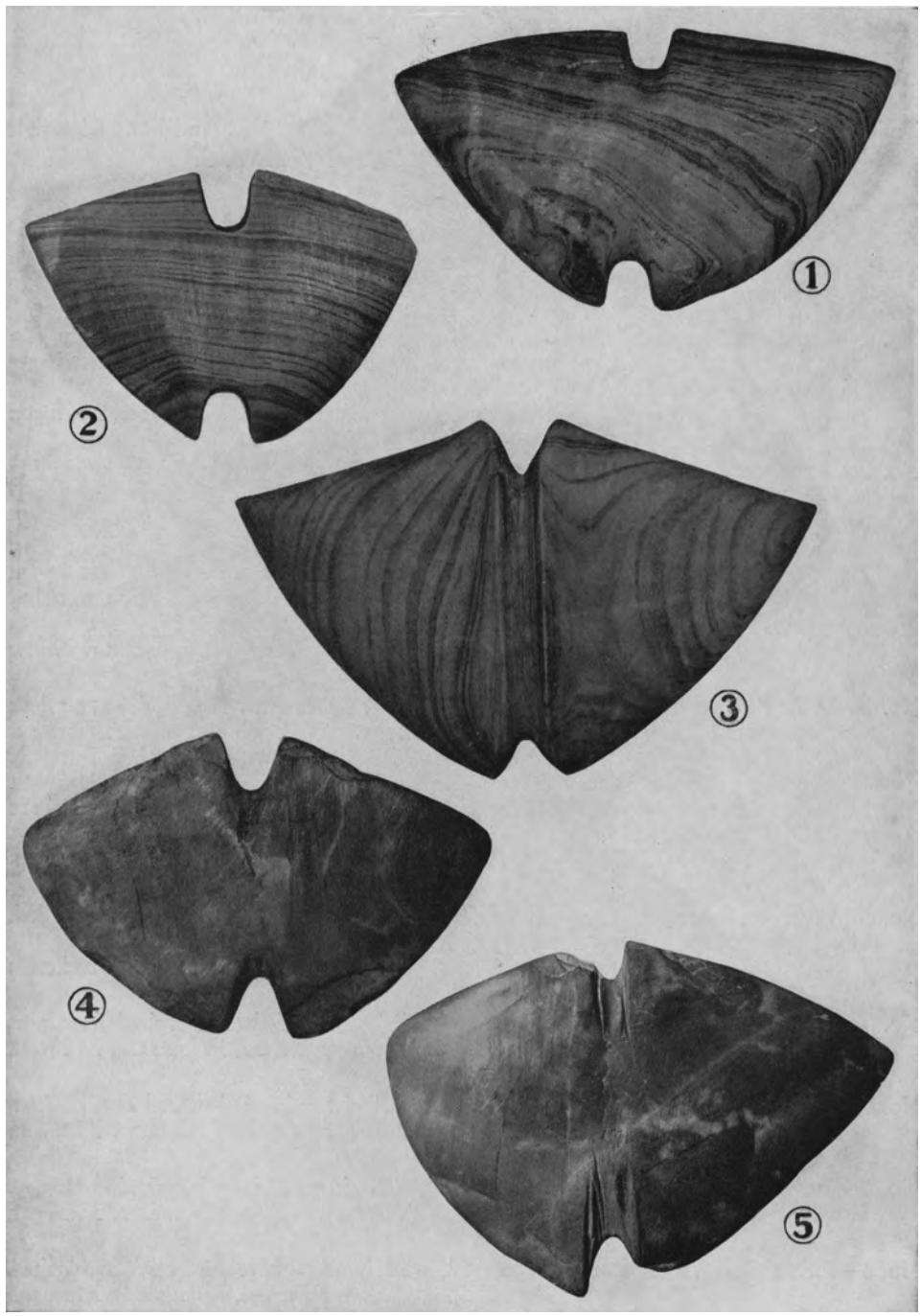


PLATE 246

EXPLANATION OF PLATE 247

NOTCHED BUTTERFLY GROUP

Undrilled Notched Butterfly Types No. 26 of Various Banded-slate and Flint Materials from the Heart and Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—KENT COUNTY, MICHIGAN. Material, grayish green banded-slate, badly disintegrated and discolored brown from age. This is an exceptionally large and beautifully made specimen. Size 6 5/8 x 3 3/4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—PIKE COUNTY, ILLINOIS. Material, pink and white flint, showing some grinding and polishing. This specimen and the one illustrated under No. 3 are the only specimens of their kind the writer has observed. He believes that they should be classified in this group of banner-stones regardless of the fact that they are made of flint. Although this pattern was found a considerable distance west of the locality in which those made of banded-slate most abundantly occur, there is a possibility that it was carried there as many other specimens were. Size 5 x 1 3/4 inches.
C. C. Benedict collection, Decatur, Illinois

No. 3—STEUBEN COUNTY, INDIANA. Material, grayish white flint. Found close to a lake near the town of Angola. The writer wishes particularly to point out the fact that this specimen was found in the area in which the Undrilled Notched Butterfly types occur. Although this specimen is made of flint there is no reason why it cannot be classified as a banner-stone belonging to this group. Patterns of this material are exceedingly rare Size 3 3/4 x 2 3/8 inches.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 4—HANCOCK COUNTY, TENNESSEE. Material, brown ferruginous slate, faintly banded. Size 5 3/4 x 3 1/4 inches. Formerly in the E. W. Payne collection.
From the author's collection

No. 5—BARRY COUNTY, MICHIGAN. Material, light banded-slate, bleached from age. Size 5 1/4 x 4 1/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 6—MONTCALM COUNTY, MICHIGAN. Material, light unbanded-slate, bleached from age. Size 5 x 2 3/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—EATON COUNTY, MICHIGAN. Material, light banded-slate, bleached from age. Size 4 5/8 x 2 3/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—EATON COUNTY, MICHIGAN. Material, green banded-slate. Size 4 5/8 x 3 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

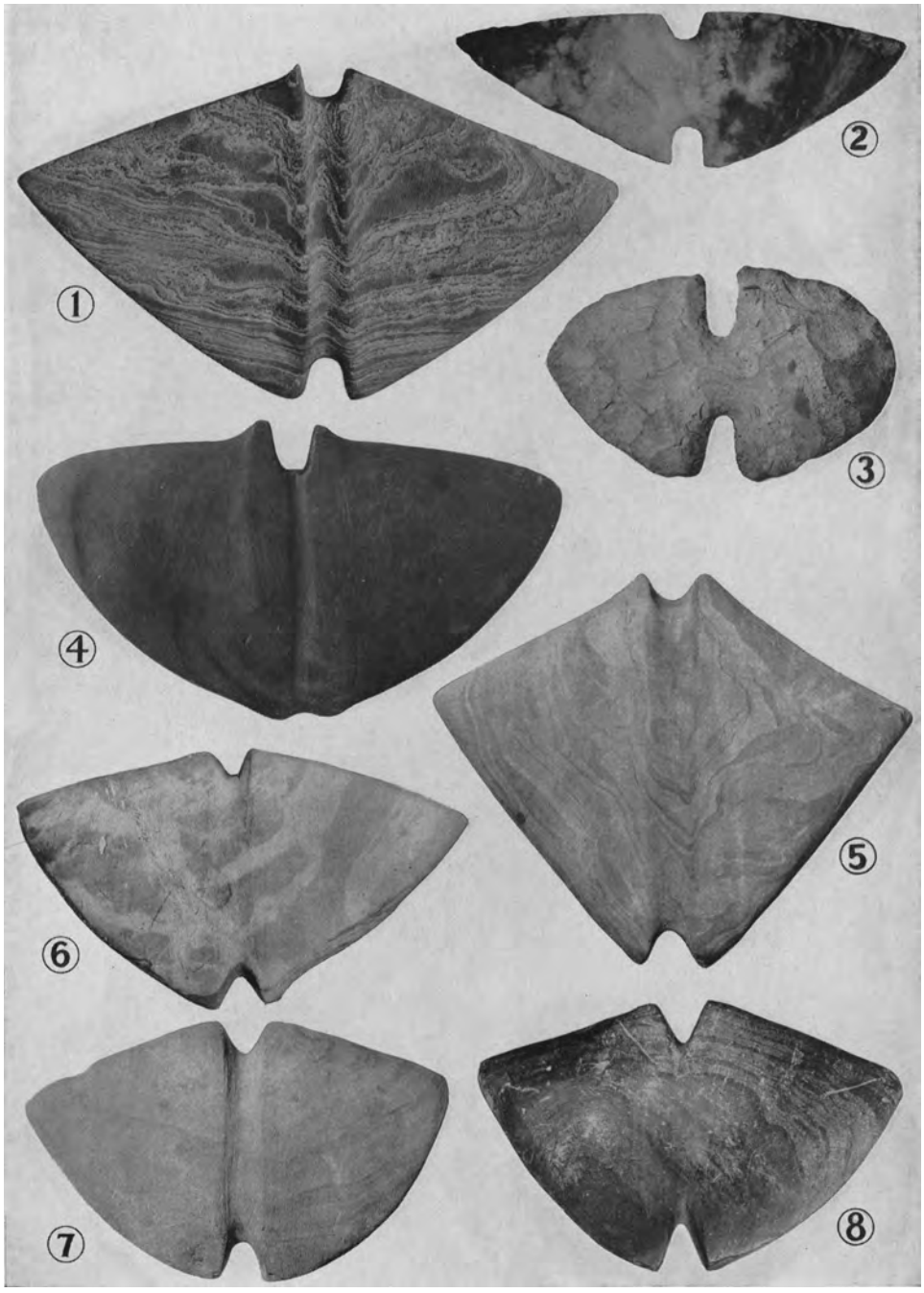


PLATE 247

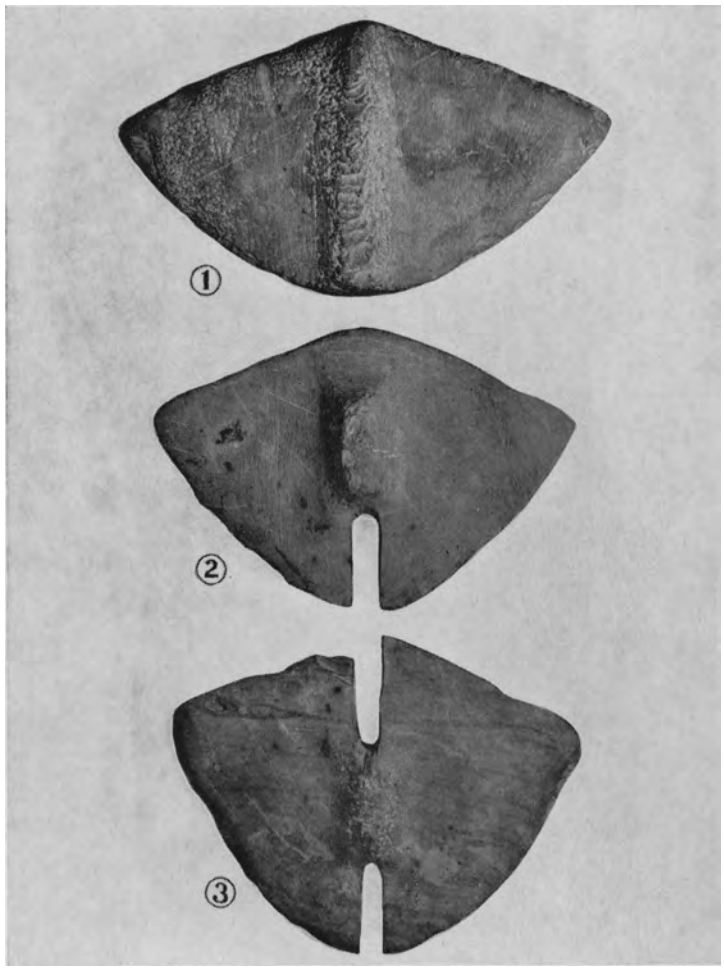


PLATE 248. The unfinished specimens illustrated in this plate belong to the Notched Butterfly Group. Each object shows a different stage of the completion of the ultimate pattern No. 25.

No. 1—Ingham County, Michigan. No evidence of drilling.

No. 2—Cass County, Michigan. This obejct has but one notch.

No. 3—Branch County, Michigan. Note the two notches.

Plate 3/8 actual size.

FROM DONALD O. BOUDEMAN COLLECTION, KALAMAZOO, MICHIGAN

BI-FACE BOTTLE GROUP

TYPE No. 29

Mention has been made in the article *Single-face Bottle Group* that the so-called bottle shaped banner-stones have been divided into two type groups. The one group is comprised of *single-face* patterns, while the other group is comprised of *bi-face* patterns. It is very obvious that the type specimens of each of these groups had developed independently of each other from two differently designed primary forms. Therefore, no relationship between the two designs exists. This article will describe briefly the specimens which comprise the *Bi-face Bottle Group*.

The origin of this group can easily be traced to the *Southern Tubular Primary Form No. 8*. By following the evolutionary development of the design from the primary form to the ultimate patterns, one can note the manner in which the design became created.

Plate 249 illustrates relatively few of these objects consisting of blending forms and type specimens. It is to be regretted that there are not more of these objects represented. The reason why so few are shown is due to the fact that they are extremely rare. The writer has been very fortunate in locating specimens which are diversified in shape. From the pictures of those shown in this plate one can easily note the evolution of the design and also note the adopted quartz materials from which they are made. The specimens, Nos. 1 and 2, are very interesting because they show the first evolutionary step toward a higher development.

The most highly specialized type specimens so far observed are shown under Nos. 7 and 8. Apparently banner-stones of this design have never before been described or illustrated in any publication. At least the writer is not aware of any mention of them. The specimen No. 8 is probably the finest so far discovered. The quartz material from which it is made is exceptionally beautiful, and the workmanship displayed is superb.

The travel route taken by the Indians who made these patterns can

(Continued on Page 536)

EXPLANATION OF PLATE 249

BI-FACE BOTTLE GROUP

Blending Forms and Types No. 29 of Various Quartz Materials from the Primary Area and the Lower and Middle Mississippi Valley Areas

CLASS B AND C SPECIMENS

Plate 5/9 actual size

No. 1—ALABAMA, County unknown. Material, quartzite. This specimen is pecked into shape and shows a shallow depression on one end. Class B specimen.
Alabama Museum of Natural History, Inc. collection, University, Alabama

No. 2—MACOUPIN COUNTY, ILLINOIS. Material, tan quartzite, and the surface shows evidence of pecking. Apparently this specimen was carried from the Lower Mississippi Valley Area to the county in Illinois in which it was found. Class B specimen. *B. W. Stephens collection, Quincy, Illinois*

No. 3—DAVIESS COUNTY, KENTUCKY. Material, white and tan mottled and veined quartz, highly polished. Catalogue number 14. Class B specimen.
From the author's collection

No. 4—CLAIBORNE COUNTY, LOUISIANA. Material, quartzite. Neg. Nos. 24581-G58517. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 5—MISSISSIPPI, County unknown. Material, ferruginous quartz. Plate 2. Catalogue number 1/1821. Class C specimen.
American Museum of Natural History collection, New York, N. Y.

No. 6—MISSOURI, County unknown. Material, dark redish brown ferruginous quartz, highly polished. Found near the Missouri River. Class C specimen.
E. W. Payne collection, Springfield, Illinois

No. 7—WEST CORROL COUNTY, LOUISIANA. Material, dark reddish brown quartz. Found on the B. W. Marston Farm by Bayou Macon near the town of Floyd in 1925. This specimen is extremely highly developed. Patterns of this design are very rare. Catalogue number Z-12. Class C specimen.
Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas

No. 8—PIKE COUNTY, ARKANSAS. Material, white translucent quartz with dark brown blotches. This specimen is extremely highly developed and is probably the finest so far discovered, at least it is the finest the writer has come in contact with. Class C specimen. *Harry J. Lemley and W. Kendall Lemley collection, Hope, Arkansas*

No. 9—SCOTT COUNTY, ARKANSAS. Material, ferruginous quartz. Case 18. C. R. Gannaway. Neg. Nos. 24581-A171873. Class B specimen.
Smithsonian Institution, United States National Museum collection, Washington, D. C.

No. 10—PIKE COUNTY, MISSOURI. Material, pink translucent ferruginous quartz. Collected by the author. Class C specimen.
Dr. P. F. Titterington collection, St. Louis, Missouri

No. 11—PIKE COUNTY, ILLINOIS. Material, pink and white ferruginous quartz. One end of this specimen is broken away. Collected by the author. Catalogue number 3014. Class C specimen. *L. C. Snyder collection, Lacona, New York*

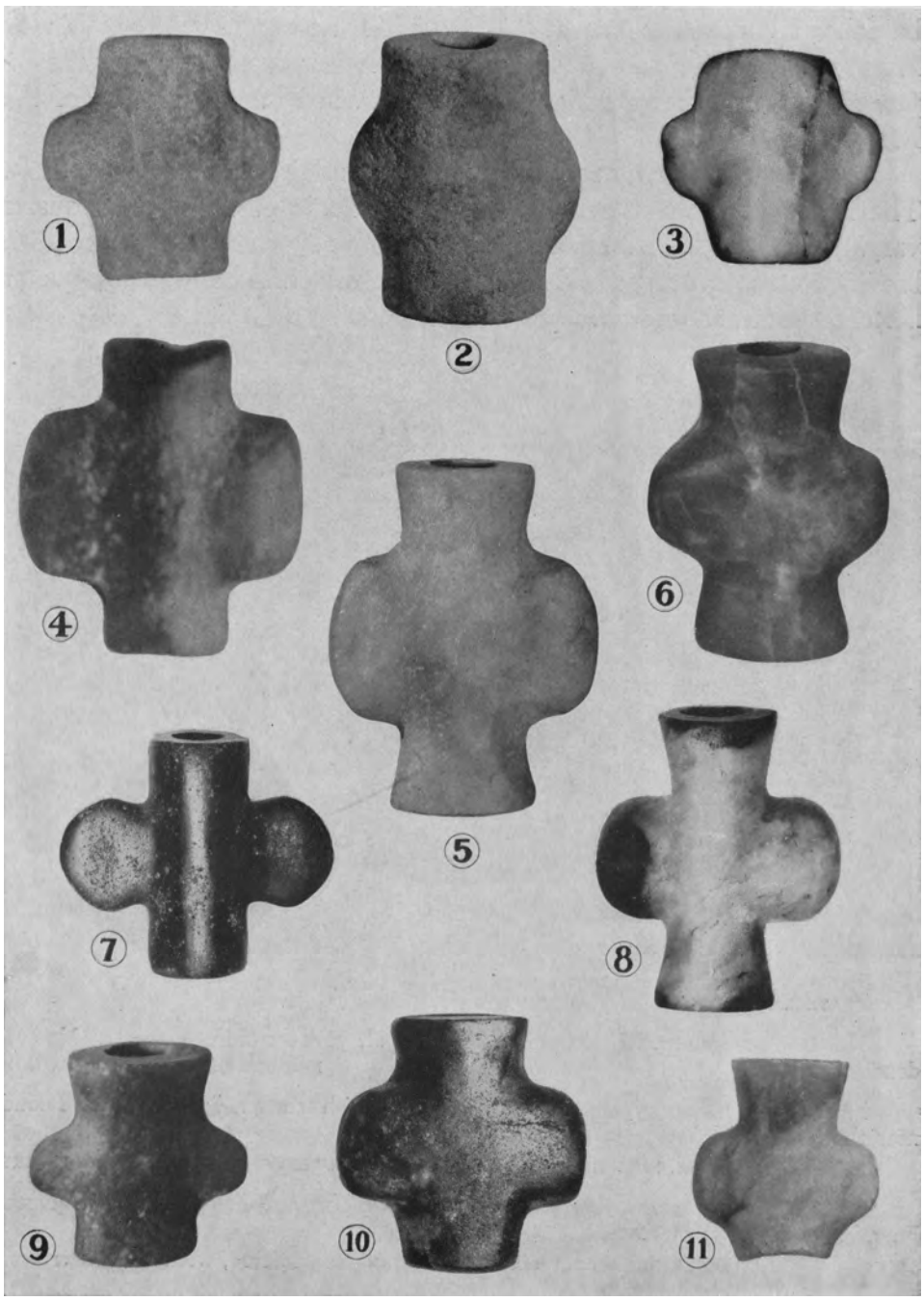


PLATE 249

be followed from the Primary Area to the Lower Mississippi Valley Area, and from there north, up this river. It is very obvious that the *Biface Bottle* design became highly developed within the lower half of the Mississippi Valley.

Usually the blending forms are made of quartzite and quartz materials. The majority of the type specimens were made of ferruginous quartz varying greatly in color. Note that specimen No. 7 is made of dark reddish brown opaque quartz, and No. 8 is made of white translucent quartz blotched with dark brown.

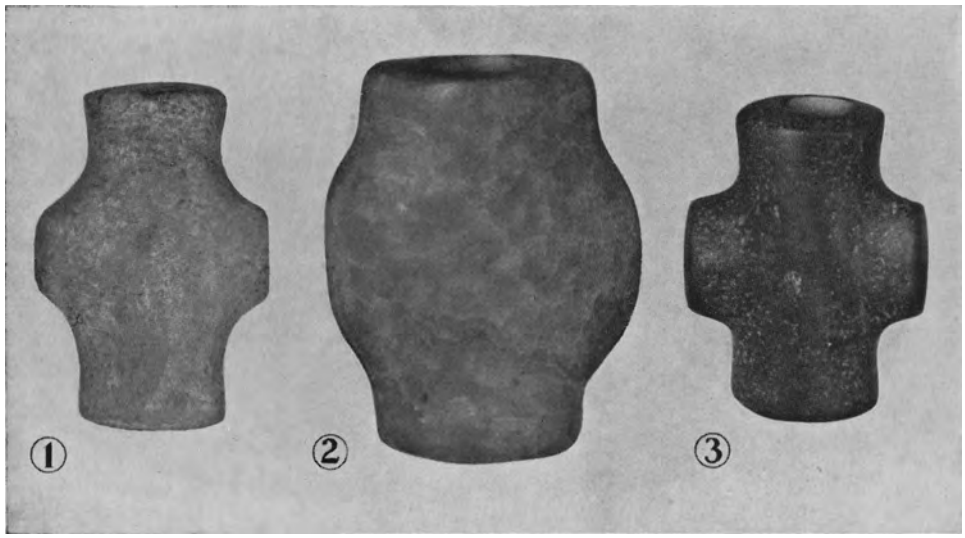


PLATE 250.

No. 1—Lee County, Mississippi. Material, pale pink ferruginous quartz. No evidence of drilling. FROM THE AUTHOR'S COLLECTION

No. 2 Union County, Kentucky. Material, grayish tan translucent quartz. Found near the town of Uniontown.

MRS. BLANCHE BUSEY KING, ANCIENT BURIED CITY, WICKLIFFE, KENTUCKY

No. 3 Ballard County, Kentucky. Material, dark brownish red ferruginous quartz. Found near the town of Kivil.

MRS. BLANCHE BUSEY KING, ANCIENT BURIED CITY, WICKLIFFE, KENTUCKY

Plate 2/3 actual size.

TUBULAR GROUP

By referring to the pen-and-ink drawings on page 157, one can note that this group is comprised of three differently designed variations. The reason these three variations were placed into one group, the *Tubular Group*, is that these objects are very closely related to each other even though their construction is different.

There may be many who will in an offhand manner believe that the so-called *Tubes* should not be classified as banner-stones. The writer shall give a number of reasons why he believes these objects can be so classified. These reasons are given in the following paragraphs, as follows:

First: the mere fact that the perforations through the *Tubular* specimens correspond to those through the objects which no one will dispute as being banner-stones, is convincing proof that the perforations were made to place them on the ends of staffs, at least during certain ceremonial occasions.

Second: it is true that many tubular shaped objects were pipes, used for smoking. These can easily be distinguished by the drilling from those which can be classified as banner-stones. The tubular shaped pipes show conical shaped drilling. The hole in one end is greatly enlarged to contain the tobacco, while the hole on the other is small and was used as the stem hole. The perforations through tubular shaped banner-stones are uniform in width, and were not designed to hold tobacco or to be used as pipes.

Third: the *Tubular* patterns vary greatly in length. Many of those which are quite short are regarded by many as being true banner-stones, while those which are lengthy may not. It may be well to ask this question: at what length can a dividing line be placed to separate the banner-stones from the so-called tubes?

An excellent example to demonstrate this complex situation is the *Fluted Ball* patterns which are regarded without question as being banner-stones. One can note that the *Fluted Ball* and the *Fluted Tubular* shapes,

of which many are quite long, merge together. This shows a very close evolutionary relationship, and for this reason these variations should come under one classification regardless of length.

Fourth: the name *Banner-stone* is in reality more or less meaningless. It seems to signify but one definite use, that is to place the objects so classified on the ends of staffs, to be used as ceremonial banners. It is true that the majority of the banner-stones were so used, but they were also undoubtedly worn ornamentally the greater part of the time. Others were probably attached to headdresses or were used in other ways. There is no doubting but that they were all regarded as ceremonial symbols regardless of how they were used. Therefore, one can regard the *Tubular* shaped objects with uniform drilling as banner-stones whether or not they were placed on the ends of staffs and were used as ceremonial tubes during certain ceremonies.

Fifth: many of the *Tubular* patterns were probably used by the medicine men to cure diseases, exorcize evil spirits from certain individuals, and for many other feats. This purpose was accomplished by placing one end of the stone to the bodies of those afflicted and by sucking the other end of the stone to extract the evil spirits.

Sixth: the fact that many of the *Tubular* objects are broken at the ends, proves that they were frequently placed upon the ends of staffs in the same manner as other banner-stones. These breaks show that the pressure which caused the breaks came from inside the perforations.

The writer has asked Mr. Sprague W. Chambers, who has had over fifty years collecting experience, to express in a short article his conclusions on this subject. Mr. Chamber's conclusions are given as follows:

SHOULD SOME TUBES BE CLASSIFIED AS BANNER-STONES?

"In my opinion, many pieces that are generally classified as tubes are in reality banner-stones, and I believe they were used as such in prehistoric times.

Collectors speak of certain Indian relics merging from one classification into another. Take, for instance, the bar amulet, which, by gradual changes, finally ends in the form of a bird stone. Or, the gorget, when arranged in a series of specimens comprised of variations, assumes the form of a boat stone. This is true of most classifications. The arrow head, if it is long enough, becomes known as a spear head, or if the chipping changes the shape, it is called a drill, even if found inbedded in the skull of a prehistoric man.

Every collector is aware that the ball banner-stone is merely a large sized bead, many

of them no larger than the prehistoric beads found in Mexico, yet, they are always called banner-stones, whether or not they are grooved on one side.

I have for many years believed that many of the so-called tubes, such as, those which are heavy having square sides, are banner-stones. Many of these would be extremely awkward for smoking purposes, but would be ideal for banner-stones.

I also believe that many of the flat, thin and large-at-one-end tubes are in reality banner-stones.

During fifty years of collecting, I have found that delicate tubes are not nearly so frequently found broken as the heavy square sides tubes. My experience has been that three out of four of the latter type are broken, and it was years before I obtained a perfect one. Not only that, the breaks are almost always precisely like those found in banner-stones.

In this form of tube the drilling is always the same as is found in banner-stones, although it varies greatly in other forms of tubes, and if broken, the break shows the same (in my opinion) unmistakable evidence of breaking caused by a wet wooden staff swelling until the stone burst. I have never seen similar breaks in other tubes than those mentioned.

Certainly, many of the recognized types of banner-stones might just as reasonably be classified as smoking tubes for they would certainly be much more convenient in smoking than the square sided tubes. (*Signed*) SPRAGUE W. CHAMBERS"

FLUTED BALL AND FLUTED TUBULAR VARIATIONS

TYPE No. 30

These objects vary greatly in size and shape. They are in reality comprised of two variations: those which are ball shaped and those which are tubular. It is a difficult problem to determine which one of the two variations preceded the other. They can easily be identified by the flute on one side. Therefore, these objects are of *single-face* construction.

Occasionally one can observe ball-shaped specimens which have no flutes, while others show but a slight indication of a small flattened plane. From these variations one may form an opinion that the design of the patterns without flutes were created before those which are fluted.

These objects occur through the Heart Area, and the most commonly used material for their making was banded-slate. Occasionally one can note specimens made of compact sandstone, ferruginous slate, steatite, chlorite, and granite materials, but specimens made of these varieties of rock are very rare.

Plates 252, 253, and 254 illustrate a large number of the *Fluted Ball* patterns. From those shown, one can note the many variations and the differently constructed flutes.

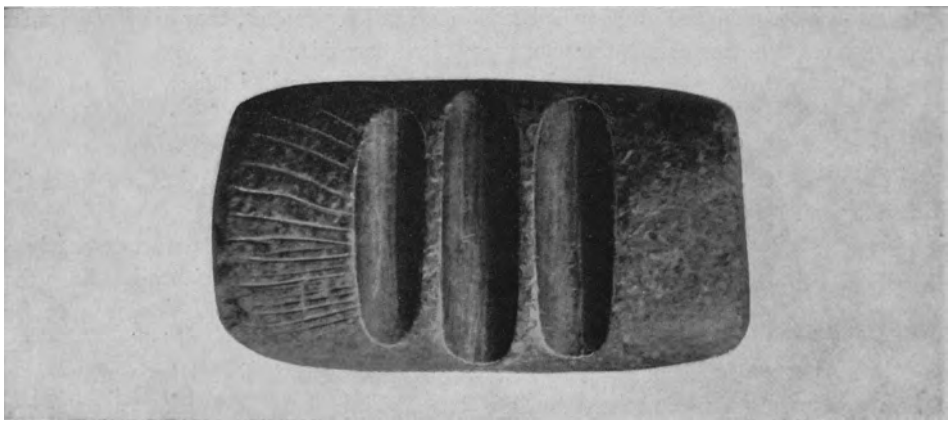


PLATE 251.

Sullivan County, Missouri. Material, gray soap-stone. This object was used for straightening and polishing arrow-shafts. It is interesting to note that some of the flutes on Fluted Ball banner-stones are similar to those on this specimen. Yet it is not very probable that these particular banner-stones were fluted for this purpose.

Plate actual size. FROM THE AUTHOR'S COLLECTION

An exceptionally beautiful and remarkably well made specimen is shown in Plate 254 under No. 10, which is made of green chlorite material, and for that reason it is very rare. Another remarkable pattern is shown under No. 11, which is made of speckled granite material, and for that reason is also unusually interesting and rare.

Plate 255 illustrates a large number of the *Fluted Tubular* patterns. The most unusually designed specimen so far observed is shown under No. 6. The serrated edges add greatly to its unique design. Although this object appears to be not of regulation form, a study of its lines and planes permit it to be placed in this classification.

ROUND AND OVAL TUBULAR VARIATIONS

TYPE No. 31

These particular *Tubular* patterns are comprised of two variations: those which are round and those which are oval in cross-section. By this construction they can easily be identified. Their distribution is exceptionally large, and they occur throughout the Type Area. They occur, however, more abundantly within the Heart Area.

These objects vary greatly in size and length. Those from the Heart Area are usually made of banded-slate material, while those from the Middle Mississippi Valley Area are made of various materials.

Plate 256 illustrates a large number of the round-in-cross-section variations, mainly from the Middle Mississippi Valley Area. In this plate a very rare decorated specimen is shown under No. 2, and is the only one of its kind so far observed. Specimen under No. 10 is exceptionally rare because of the fact that it is made of ferruginous quartz. There is no doubt that those shown in this plate were made by different cultures than those which were made within the Heart Area.

Plate 257 illustrates a large number of lengthy patterns from the Heart Area. Note that the majority of those shown are made of banded-slate material. An exceptional specimen is shown under No. 7.

Plate 258 illustrates a number of the oval-in-cross-section variations. The most beautiful of those shown in this plate is No. 1.

SQUARE, TRIANGULAR, AND SINGLE-FACE TUBULAR VARIATIONS

TYPE No. 32

These patterns are comprised of three distinct variations. Because of the fact that these objects have flat planes they were placed into one classification. Furthermore, these variations are so closely related to one another that it would be less confusing if they were classified by one name and given one type number. The square variations are of *bi-face* construction, and those which are triangular and D-shaped are of *single-face* construction.

Plate 259 illustrates a large number of the square shaped variations. Note that Nos. 6, 7 and 8 are particularly interesting because they are broken at the ends, apparently, by the insertion of the staffs.

Plate 260 illustrates a large number of the D-shaped or *single-face* variations. No. 5 is exceptional because it is made of tan indurated clay stone and shows remarkable workmanship.

Plate 261 illustrates but three of the triangular-shaped variations, which are extremely rare. It is to be regretted that there are not more of these objects represented.

EXPLANATION OF PLATE 252

FLUTED BALL AND TUBULAR GROUP

Blending Forms and Types No. 30 of Various Slate Materials from the Heart Area

CLASS B AND C SPECIMENS

Plate 2/3 actual size

No. 1—CRAWFORD COUNTY, OHIO. Material, green banded-slate. Catalogue number 3027. Class C specimen. *L. C. Snyder collection, Lacona, New York*

No. 2—INDIANA, County unknown. Material, green banded-slate. Class C specimen. *A. W. Pendergast collection, Fairbury, Illinois*

No. 3—RICHLAND COUNTY, OHIO. Material, green banded-slate. Catalogue number 3031. Class C specimen. *L. C. Snyder collection, Lacona, New York*

No. 4—INDIANA, County unknown. Material, red hematite, no flute present. Class B specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 5—GENESEE COUNTY, MICHIGAN. Material, appears to be a fine grain sand-stone discolored a dirty tan from age. The perforation is exceptionally large and shows deep grooves that run parallel with the perforation. The view displayed is the face. The back that is not shown has an exceptionally large flute. Class C specimen. *Dr. B. J. Moss collection, East Tawas, Michigan*

No. 6—NORTHHAMPTON COUNTY, PENNSYLVANIA. Material, gray soap-stone, no flute present. Class B specimen. *W. C. Fuellhart collection, Tidioute, Pennsylvania*

No. 7—MARROW COUNTY, OHIO. Material, green banded-slate. Class C specimen. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 8—CRAWFORD COUNTY, OHIO. Material, green banded-slate. Catalogue number 3034. Class C specimen. *L. C. Snyder collection, Lacona, New York*

No. 9—Locality unknown. Material, green banded-slate. Class C specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 10—Locality unknown. Material, light green banded-slate, faintly banded. Note the small shallow concave depression on this specimen. Class C specimen. *G. I. Groves collection, Chicago, Illinois*

No. 11—WARRICK COUNTY, INDIANA. Material, blue banded-slate, no flute present. Class B specimen. *Thomas J. Dillingham collection, Boonville, Indiana*

No. 12—HUNTINGTON COUNTY, INDIANA. Material, blue banded-slate, beautifully marked. Class C specimen. *Sprague W. Chambers collection, Kalamazoo, Michigan*

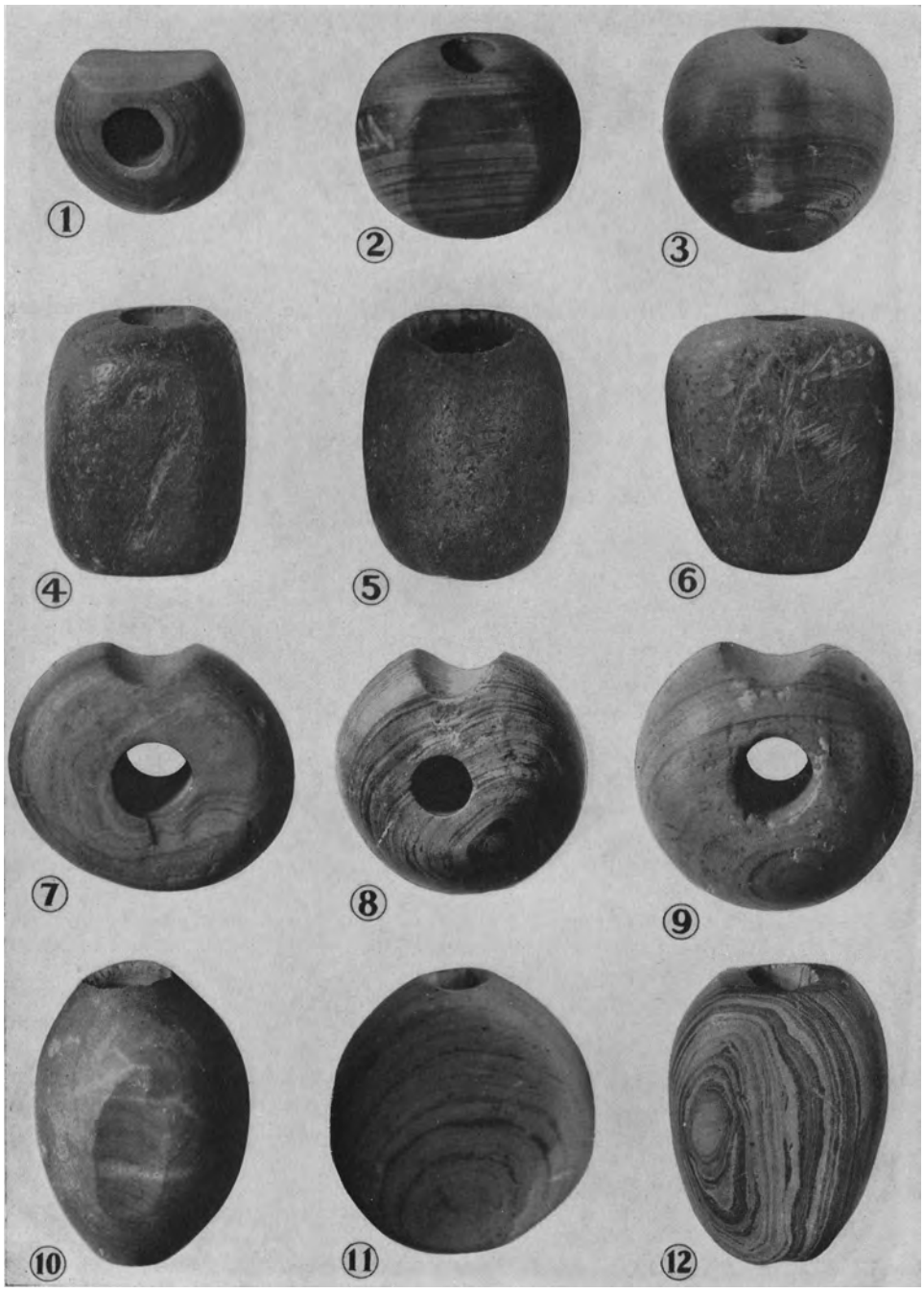


PLATE 252

EXPLANATION OF PLATE 253

FLUTED BALL AND TUBULAR GROUP

Fluted Ball Types No. 30 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—Fulton County, Indiana. Material, blue banded-slate. Size 1 7/8 x 1 3/8 inches.
From the author's collection

No. 2—Ohio, County unknown. Material, green banded-slate. Size 1 3/8 x 1 1/8 inches. Catalogue number 563.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 3—Barry County, Michigan. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 4—Crawford County, Ohio. Material, blue banded-slate. Catalogue number 75. Size 1 7/8 x 1 5/8 inches. *From the author's collection*

No. 5—Seneca County, Ohio. Material, banded-slate, discolored brown from age. Size 1 5/8 x 1 3/4 inches. Catalogue number 604.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 6—Van Buren County, Michigan. Material, light green banded-slate.
Sprague W. Chambers collection, Kalamazoo, Michigan

No. 7—De Kalb County, Indiana. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 8—Ashland County, Ohio. Material, dark green banded-slate. Found in 1879. Size 2 1/4 x 2 1/8 inches. Catalogue number 73. *From the author's collection*

No. 9—Williams County, Ohio. Material, green banded-slate. Catalogue number 672.
From the author's collection

No. 10—Hillsdale County, Michigan. Material, dark green banded-slate, discolored a dark brown from age. Surface highly polished. Note the deep narrow groove.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 11—Mercer County, Ohio. Material, green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 12—Hillsdale County, Michigan. Material, dark green banded-slate.
Donald O. Boudeman collection, Kalamazoo, Michigan

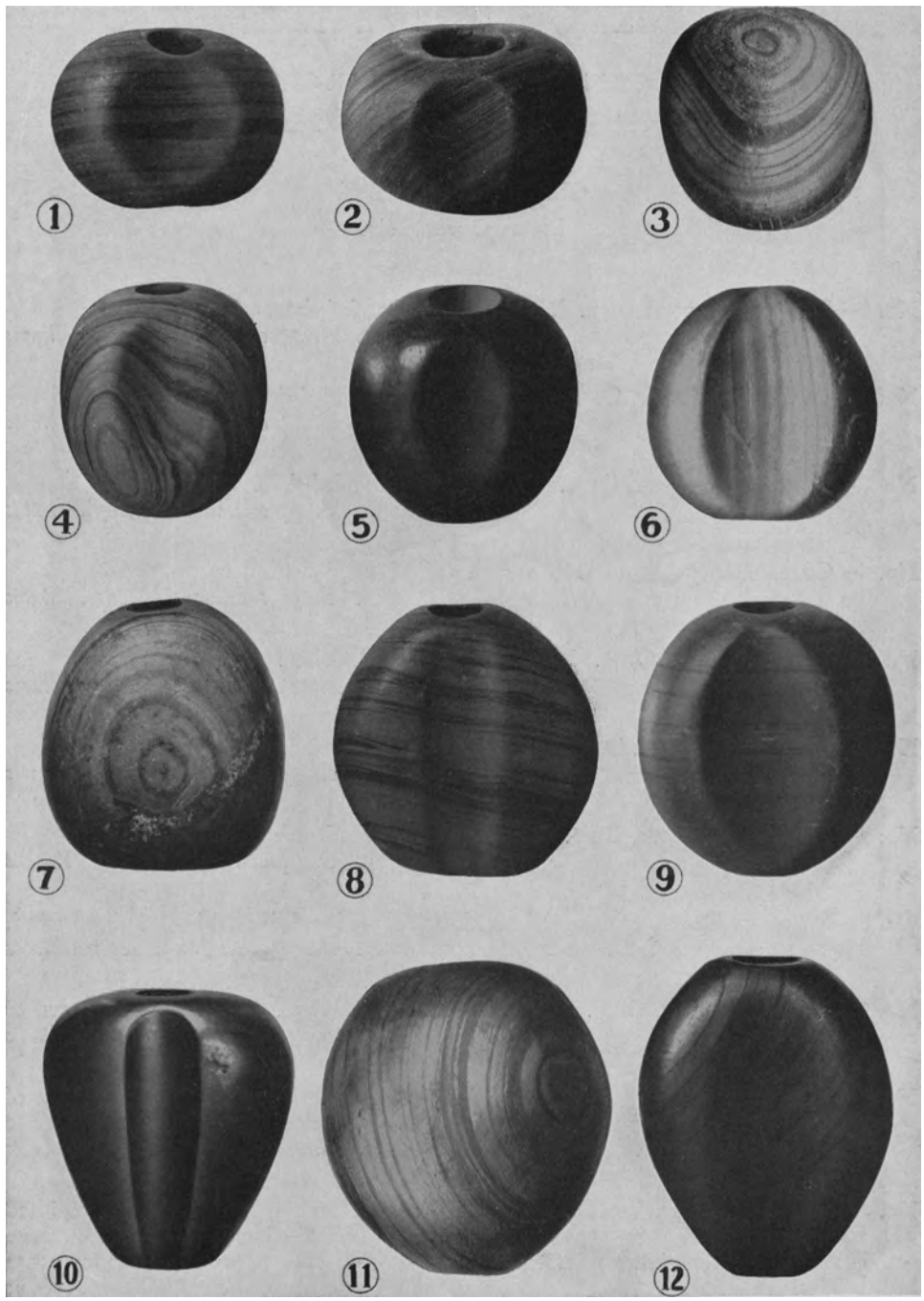


PLATE 253

EXPLANATION OF PLATE 254

FLUTED BALL AND TUBULAR GROUP

Fluted Ball Types No. 30 of Various Materials from the Heart Area

CLASS C SPECIMENS

Plate 2/3 actual size

No. 1—Ohio, County unknown. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 2—Franklin County, Ohio. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 3—Highland County, Ohio. Material, blue banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 4—Ohio, County unknown. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 5—Miami County, Ohio. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 6—Highland County, Ohio. Material, green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 7—Pickaway County, Ohio. Material, dark green banded-slate.
Phillip C. Schupp collection, Chicago, Illinois

No. 8—Richland County, Ohio. Material, light blue banded-slate, beautifully marked. Found near the town of Mansfield. *Phillip C. Schupp collection, Chicago, Illinois*

No. 9—Holmes County, Ohio. Material, blue banded slate. Found near the town of Millersburg. *Phillip C. Schupp collection, Chicago, Illinois*

No. 10—Ohio, County unknown. Material, chlorite, mottled with various shades of green. The picture on the left shows the face, the picture on the right shows the back. *Phillip C. Schupp collection, Chicago, Illinois*

No. 11—Henry County, Indiana. Material, black and white spotted granite, polished and discolored from age. The perforation is three-fourths inch in diameter. Because of the fact this specimen has no flute it should be classified as a blending form. Class B Specimen. *Phillip C. Schupp collection, Chicago, Illinois*

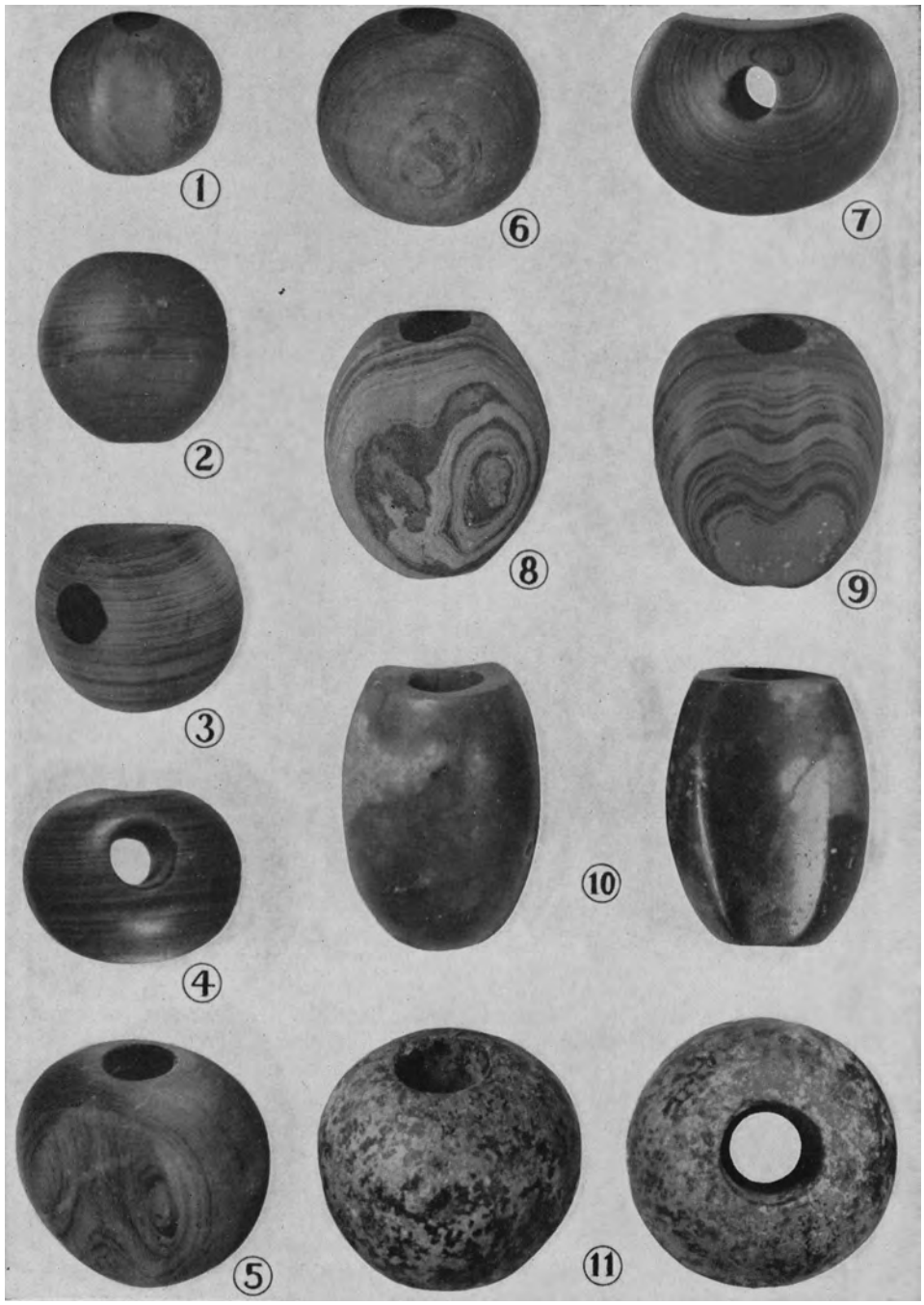


PLATE 254

EXPLANATION OF PLATE 255

FLUTED BALL AND TUBULAR GROUP

Fluted Tubular Types No. 30 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—WILLIAMS COUNTY, OHIO. Material, green banded-slate. Catalogue number 1052. Size 2 1/2 x 1 3/4 inches. *From the author's collection*

No. 2—TENNESSEE, County unknown. Material, ferruginous slate, rich brown color. The author believes that the hole in the side of the stone was made for the insertion of a plug into the inserted staff to prevent it from slipping off. Size 2 7/8 x 1 1/2 inches. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 3—EATON COUNTY, MICHIGAN. Material, green banded-slate. Size 3 1/2 x 2 5/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 4—EATON COUNTY, MICHIGAN. Material, green banded-slate. This is a very unusual specimen because of the extremely wide groove. Size 3 1/2 x 1 7/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 5—INDIANA, County unknown. Material, green banded-slate. Very shallow groove. Size 4 1/8 x 1 3/8 inches. *N. E. Carter collection, Elkhorn, Wisconsin*

No. 6—WILLIAMS COUNTY, OHIO. Material, green banded-slate. Catalogue number 605. Length 3 3/4 inches. Width 2 1/2 inches, thickness 7/8 inch. Both sides of this unusual specimen are shown in this illustration. Note, one side has a raised ridge, the other side has a well defined groove. Note the tally notches on the outer edges, one edge shows 17, the other 19. *From the author's collection*

No. 7—RANDOLPH COUNTY, INDIANA. Material, green banded-slate. Size 4 x 1 5/8 inches. *B. W. Stephens collection, Quincy, Illinois*

No. 8—SENECA COUNTY, OHIO. Material, green banded-slate. Size 3 x 1 1/4 inches. Note the lower end is broken away apparently by the insertion of a staff. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—TIOGA COUNTY, NEW YORK. Material, green banded-slate. Size 3 1/2 x 1 3/8 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 10—WILLIAMS COUNTY, OHIO. Material, green banded-slate. Size 3 1/4 x 1 1/2 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 11—ALLEGAN COUNTY, MICHIGAN. Material, light blue banded-slate. Size 3 1/2 x 1 inch. *From the author's collection*

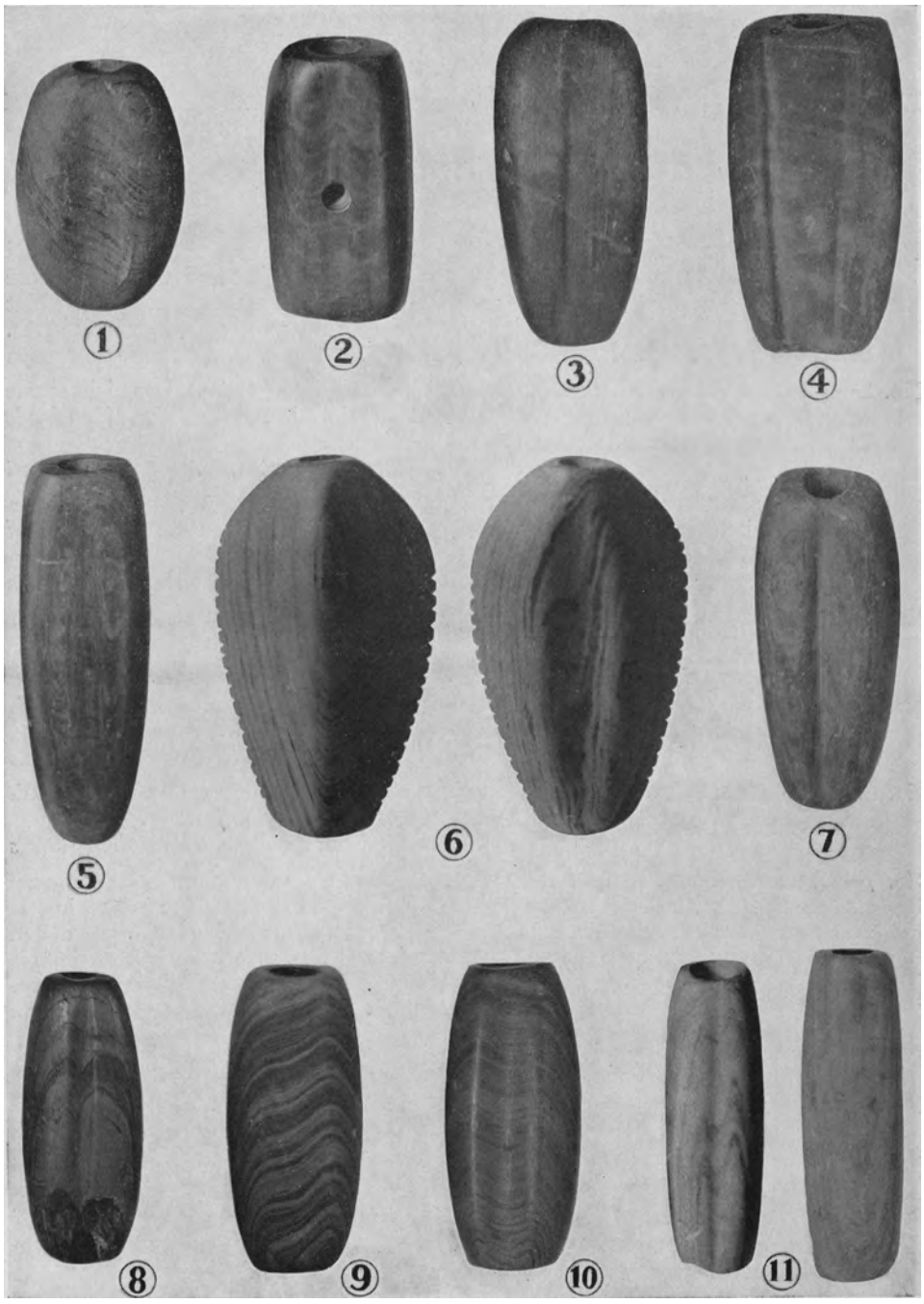


PLATE 255

EXPLANATION OF PLATE 256

TUBULAR GROUP

Round Tubular Types No. 31 of Various Materials mainly from the Middle Mississippi Valley Area

CLASS C SPECIMENS

Plate 5/7 actual size

No. 1—FULTON COUNTY, ILLINOIS. Material, probably calcite, beautifully mottled and veined with shades of brown. Found on the north bluff of Spoon River near where it enters into the Illinois River. The drilling was done from each end with a flint drill or solid wooden drill-stick. It is possible this object was worn on a necklace. Size 2 1/4 x 1 3/4 inches. Catalogue number 605. *From the author's collection*

No. 2—MORGAN COUNTY, MISSOURI. Material, dark red quartzite. Found near the town of Versailles. Note the two ornamental designs in relief on each side of this extremely rare specimen. Size 2 1/2 x 1 5/8 inches.
E. L. Renno collection, St. Charles, Missouri

No. 3—PICKENS COUNTY, GEORGIA. Material, grayish white steatite, covered with a rusty color iron deposit from the ground in which it laid. The perforation is 3/4 of an inch in diameter. Size 2 1/4 x 1 3/4 inches. Catalogue number 99.
From the author's collection

No. 4—BRACKEN COUNTY, KENTUCKY. Material, gray quartz. Incompleted hollow reed drilling 3/4 inch deep. Size 2 5/8 x 1 1/4 inches. Catalogue number 767.
From the author's collection

No. 5—WILLIAMSON COUNTY, ILLINOIS. Material, green banded-slate. Found near Crab Orchard Creek near the town of Centerville in 1930.
Irvin Peithman collection, Carbondale, Illinois

No. 6—WILLIAMSON COUNTY, ILLINOIS. Material, white quartz. Found by Mr. O. Culbrath near Crab Orchard Creek near the town of Centerville in 1930.
Irvin Peithman collection, Carbondale, Illinois

No. 7—SANTA CATALINA ISLAND, LOS ANGELES COUNTY, CALIFORNIA. Material, soap stone, mottled with shades of tan, gray, and purple. The perforation is large and is drilled from one end. This specimen was probably used as a pipe bowl. Although this specimen cannot be classified as a banner-stone a picture was included in this group mainly for the purpose of comparison to some banner-stones of this shape. Size 2 1/8 x 1 1/2 inches. Catalogue number 547. *From the author's collection*

No. 8—JACKSON COUNTY, ILLINOIS. Material, white quartz. Found by Clyde Wisely at the south end of 23d street three hundred feet north of Big Muddy River in the town of Murphysboro in 1934. Size 2 7/8 x 1 1/2 inches.
Clyde Wisely collection, Murphysboro, Illinois

No. 9—CLAY COUNTY, ILLINOIS. Material, banded-slate. This specimen was found in a mound, and the perforation was drilled from each end. Size 3 1/8 x 2 inches.
C. C. Benedict collection, Decatur, Illinois

No. 10—JACKSON COUNTY, ILLINOIS. Material, mottled ferruginous quartz. Found northeast of the town of Murphysboro. Size 2 3/4 x 1 5/8 inches.
Clyde Wisely collection, Murphysboro, Illinois

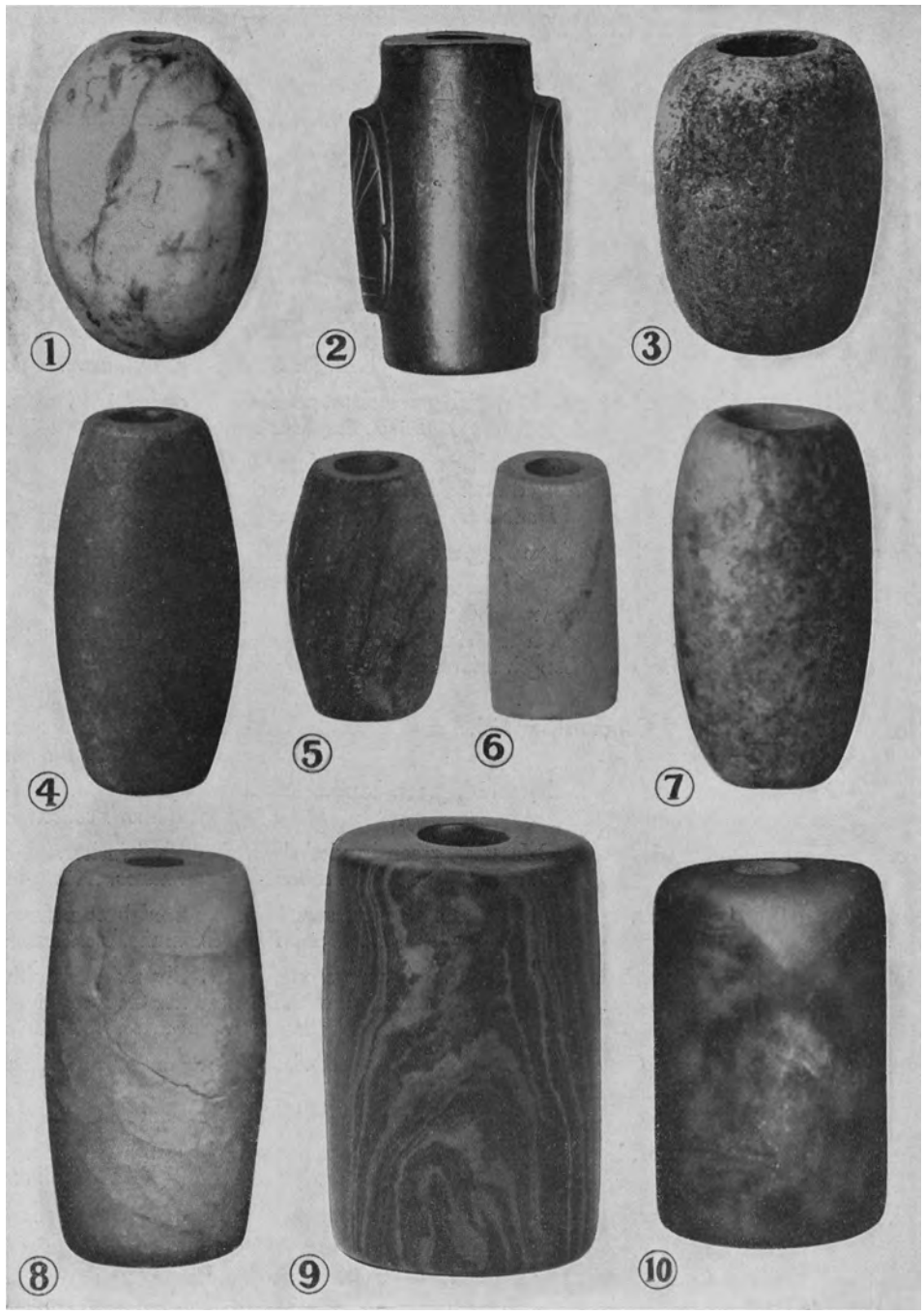


PLATE 256

EXPLANATION OF PLATE 257

TUBULAR GROUP

Round Tubular Types No. 31 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—St. Joseph County, Indiana. Material, green banded-slate. Length 3 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 2—Kentucky, County unknown. Material, ferruginous quartz. Length 2 5/8 inches.
F. P. Hills collection, Delaware, Ohio

No. 3—Calhoun County, Illinois. Material, green slate, polished. Length 2 1/4 inches.
B. W. Stephens collection, Quincy, Illinois

No. 5—Anglaize County, Ohio Material, green banded-slate. Part of one end is broken away apparently from the inserted staff Length 4 1/8 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 6—Seneca County, Ohio. Material, green banded-slate. Catalogue number 537.
From the author's collection

No. 7—Jackson County, Michigan. Material, green banded-slate, discolored from age. The drilling comes through the side of the specimen, but was completed by drilling from the other end. Length 8 inches.
B. W. Stephens collection, Quincy, Illinois

No. 8—Allen County, Ohio. Material, green banded-slate. Discolored from age. Catalogue number 536.
From the author's collection

No. 9—Ashland County, Ohio. Material, green banded-slate. Found in 1875. Catalogue number 538.
From the author's collection

No. 10—Perry County, Indiana. Material, green banded-slate. Length 4 inches.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 11—St. Louis County, Missouri. Material, gray steatite, discolored brown from age.
From the author's collection

No. 12—Oconto County, Wisconsin. Material, soap stone, beautifully mottled with shades of brown from age. Found east of the town of Stiles near the Oconto River in 1893.
Joseph Ringeisen, Jr., collection, Milwaukee, Wisconsin

No. 13—Logan County, Ohio. Material, green banded-slate. Both ends are broken away apparently by the inserted staff.
Donald O. Boudeman collection, Kalamazoo, Michigan

No. 14—Franklin County, Indiana. Material, blue banded-slate. Length 2 1/2 inches.
Philip C. Schupp collection, Chicago, Illinois

No. 15—St. Joseph County, Indiana. Material, green banded-slate. Length 2 3/4 inches.
Philip C. Schupp collection, Chicago, Illinois

No. 16—Southern Ohio, County unknown. Material, green banded-slate. Length 3 inches.
Philip C. Schupp collection, Chicago, Illinois

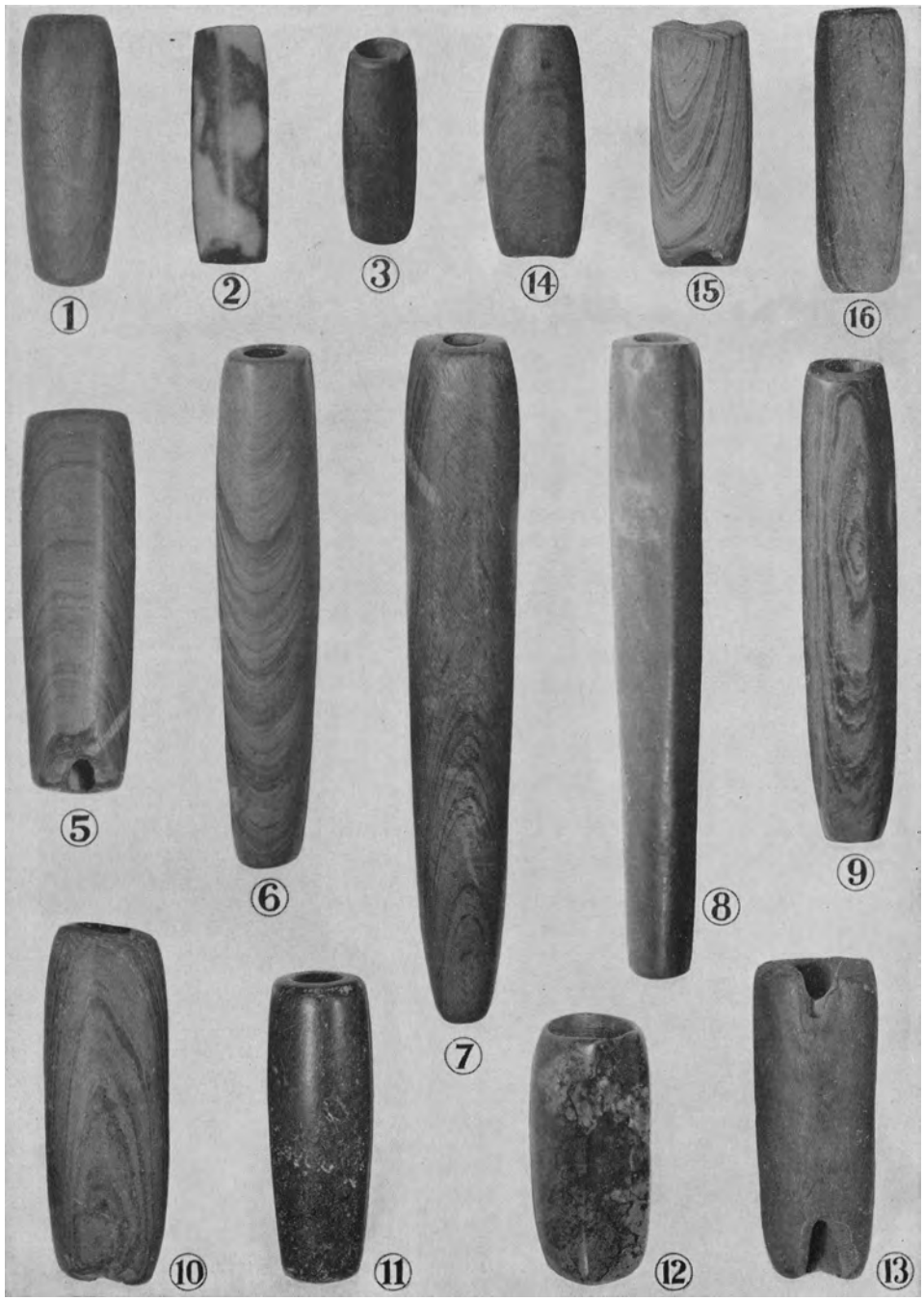


PLATE 257

EXPLANATION OF PLATE 258

TUBULAR GROUP

Oval Tubular Types No. 31 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—DECATUR COUNTY, INDIANA. Material, blue banded-slate. Found one mile south of the town of Clarksburg, May 10, 1880. Catalogue number 765. Length 6 3/8 inches. *From the author's collection*

No. 2—GENESEE COUNTY, MICHIGAN. Material, green banded-slate, faintly banded, and discolored brown from age. Catalogue number 221. Length 5 1/4 inches. *Dr. B. J. Moss collection, East Tawas, Michigan*

No. 3—MONTGOMERY COUNTY, INDIANA. Material, blue banded-slate, highly polished. Catalogue number 755. Length 4 5/8 inches. *From the author's collection*

No. 4—WAYNE COUNTY, OHIO. Material, dark green slate, highly polished. Length 3 5/8 inches. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 5—MONTGOMERY COUNTY, INDIANA. Material, green banded-slate. Found near the town of Crawfordsville. Length 4 3/8 inches. *B. W. Stephens collection, Quincy, Illinois*

No. 6—CLINTON COUNTY, OHIO. Material, light green banded-slate. Found near the town of Wilmington. Length 4 1/2 inches. *From the author's collection*

No. 7—NOBLE COUNTY, INDIANA. Material, brown slate. Length 3 3/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—INDIANA, County unknown. Material, light green banded-slate. Note part of one end is broken away apparently by the inserted staff. Length 3 5/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—INGHAM COUNTY, MICHIGAN. Material, dark green banded-slate, highly polished. The end view of this specimen is boat-shape. Length 3 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 10—Locality unknown. Material, banded clay-stone, tan color. The end view of this specimen is boat-shape. Catalogue number 5577. Length 2 3/4 inches. *E. W. Payne collection, Springfield, Illinois*

No. 11—NEW YORK, County unknown. Material, green banded-slate. Length 3 1/4 inches. *Dr. A. W. Pendergast collection, Fairbury, Illinois*

No. 12—MECOSTA COUNTY, MICHIGAN. Material, green banded-slate. Catalogue number 535. Length 3 5/8 inches. *Dr. B. J. Moss collection, East Tawas, Michigan*

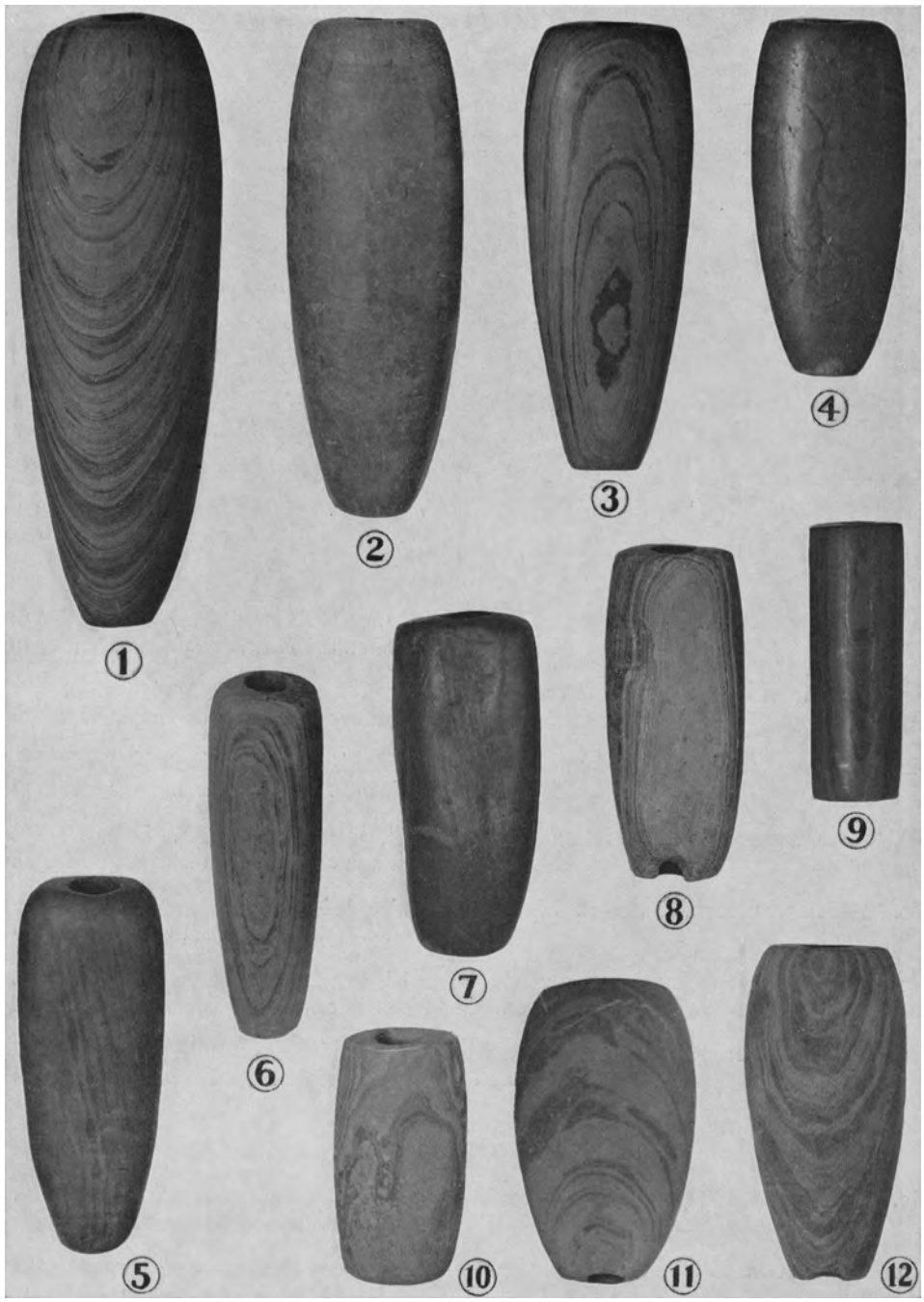


PLATE 258

EXPLANATION OF PLATE 259

TUBULAR GROUP

Square Tubular Types No. 32 of Various Banded-slate Materials from the Heart Area

CLASS C SPECIMENS

Plate 1/2 actual size

No. 1—WILLIAMS COUNTY, OHIO. Material, blue banded-slate. Length 5 inches. *From the author's collection*

No. 2—KALAMAZOO COUNTY, MICHIGAN. Material, green banded-slate. Length 4 1/4 inches. *From the author's collection*

No. 3—JEFFERSON COUNTY, INDIANA. Material, blue banded-slate. Found near the town of Madison. Length 4 3/8 inches. *From the author's collection*

No. 4—FRANKLIN COUNTY, INDIANA. Material, blue banded-slate. Length 4 3/8 inches. *From the author's collection*

No. 5—LAKE COUNTY, OHIO. Material, green banded-slate. Catalogue number 540. Length 4 1/4 inches. *From the author's collection*

No. 6—SCHEIWASSEE COUNTY, MICHIGAN. Material, green banded-slate. Length 3 1/2 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—BRANCH COUNTY, MICHIGAN. Material, green slate. Length 3 3/4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—KALAMAZOO COUNTY, MICHIGAN. Material, blue banded-slate, beautifully marked. Found near the town of Vicksburg. Length 4 inches. *From the author's collection*

No. 9—KALAMAZOO COUNTY, MICHIGAN. Material, green banded-slate. Length 3 5/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 10—HENRY COUNTY, ILLINOIS. Material, green banded-slate. Length 3 1/8 inches. *G. I. Groves collection, Chicago, Illinois*

No. 11—KALAMAZOO COUNTY, MICHIGAN. Material, green banded-slate, faintly banded. Length 2 3/4 inches. *Donald O Boudeman collection, Kalamazoo, Michigan*

No 12—CASS COUNTY, MICHIGAN Material, green banded-slate. Length 2 1/2 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 13—EATON COUNTY, MICHIGAN. Material, green banded-slate. Length 2 3/8 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 14—ALLEN COUNTY, OHIO. Material, dark green slate, discolored brown from age. Length 2 1/2 inches. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 15—KALAMAZOO COUNTY, MICHIGAN. Material, green banded-slate. Length 4 1/2 inches. *Sprague W. Chambers collection, Kalamazoo, Michigan*

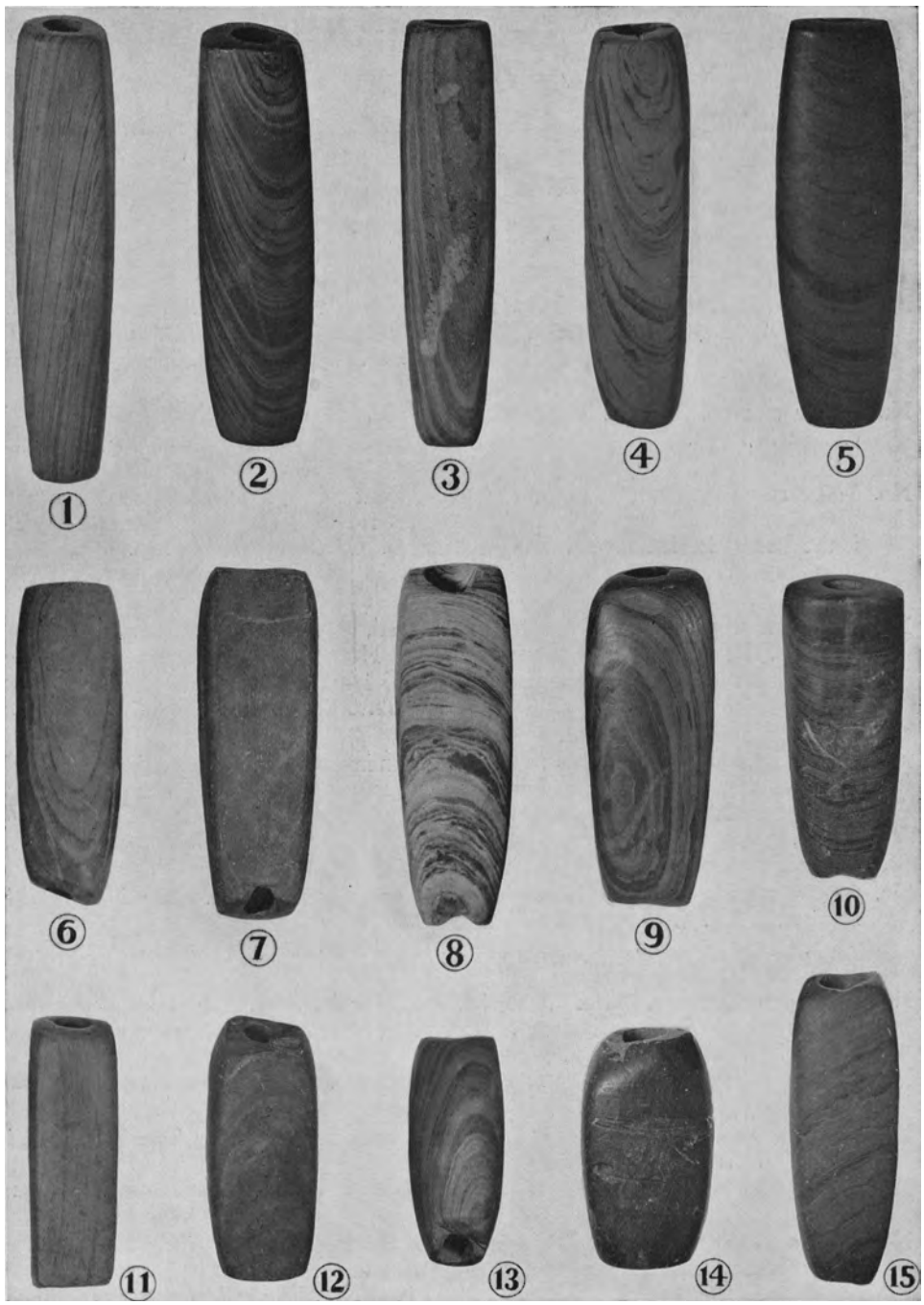


PLATE 259

EXPLANATION OF PLATE 260

TUBULAR GROUP

D-Shaped Tubular Types No. 32 of Various Slate Materials mainly from the Heart Area

CLASS C SPECIMENS

Plate 5/8 actual size

No. 1—PIKE COUNTY, ILLINOIS. Material, yellow banded-clay-stone. An end view of this specimen is semi-circular in shape. Catalogue number A9452. Length 2 5/8 inches. *E. W. Payne collection, Springfield, Illinois*

No. 2—VAN BUREN COUNTY, MICHIGAN. Material, green banded-slate, end view semi-circular in shape. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 3—MONROE COUNTY, ILLINOIS. Material, light green slate, discolored from age. The picture on the left shows the back which is a flat plane, the picture on the left is the face which is humped. Length 4 inches. Catalogue number 543. *From the author's collection*

No. 4—YAVOBLUSHA COUNTY, MISSISSIPPI. Material, gray slate. Found near the town of Oakland. The back of this specimen is flat. Note that there are two shallow depressions on both sides of the face. Length 6 1/4 inches. *Sprague W. Chambers collection, Kalamazoo, Michigan*

No. 5—HICKMAN COUNTY, KENTUCKY. Material, tan indurated clay-stone, highly polished. The picture on the left is the face which is humped, the picture on the right shows the back which is a slightly concaved plane. Catalogue number 549. Length 3 3/4 inches. *From the author's collection*

No. 6—CRAWFORD COUNTY, OHIO. Material, green banded-slate. The back of this specimen is flat. Length 3 1/2 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 7—WAYNE COUNTY, OHIO. Material, green banded-slate. The slightly flattened back of this specimen is displayed. Note part of one end is broken away apparently by the inserted staff. Length 4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 8—DE KALB COUNTY, INDIANA. Material, green banded-slate. The back of this specimen is flat. Length 4 inches. *Donald O. Boudeman collection, Kalamazoo, Michigan*

No. 9—SENECA COUNTY, OHIO. Material, dark green banded-slate, faintly banded. The back of this specimen is flat. Length 3 5/8 inches. *B. W. Stephens collection, Quincy, Illinois*

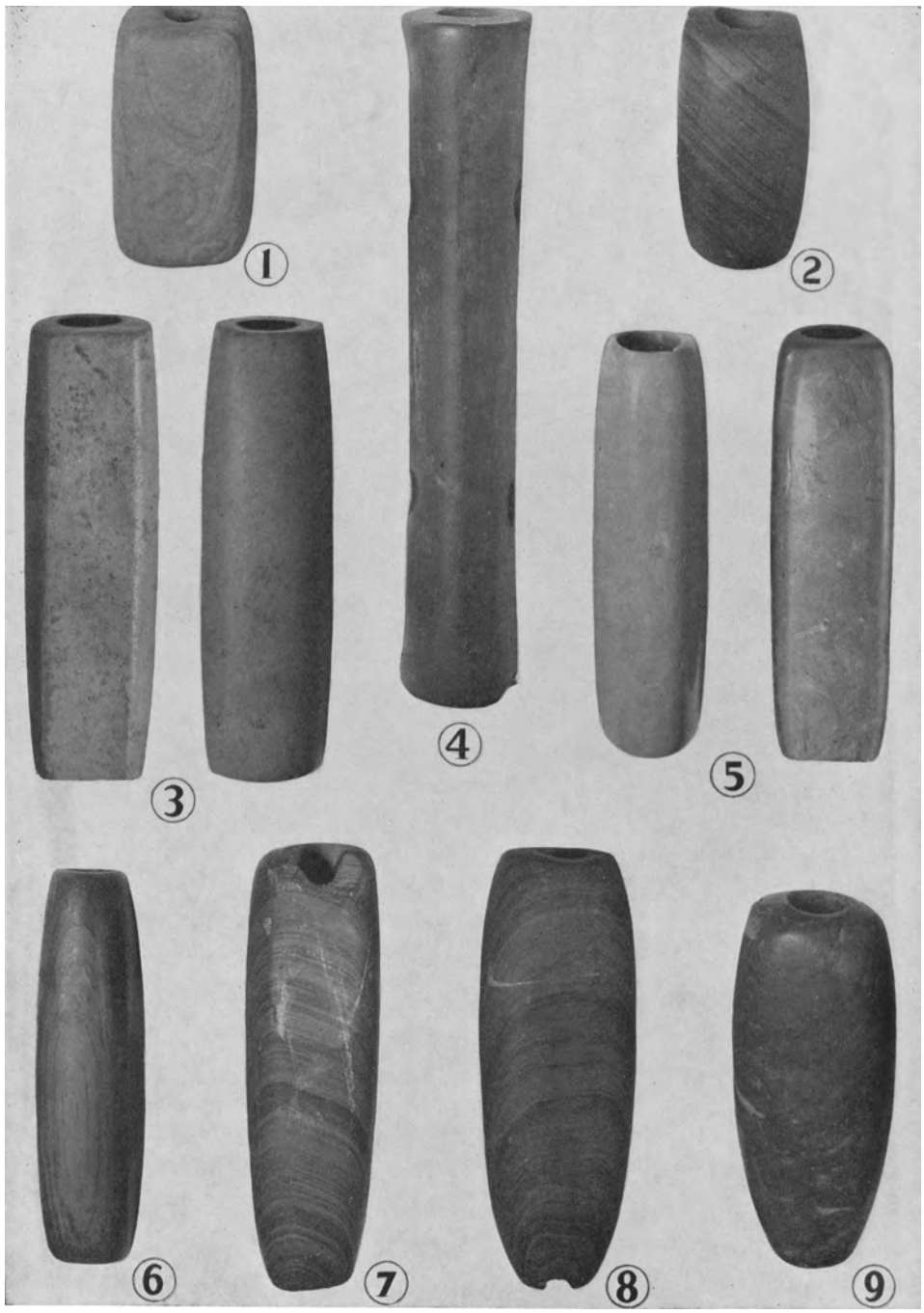
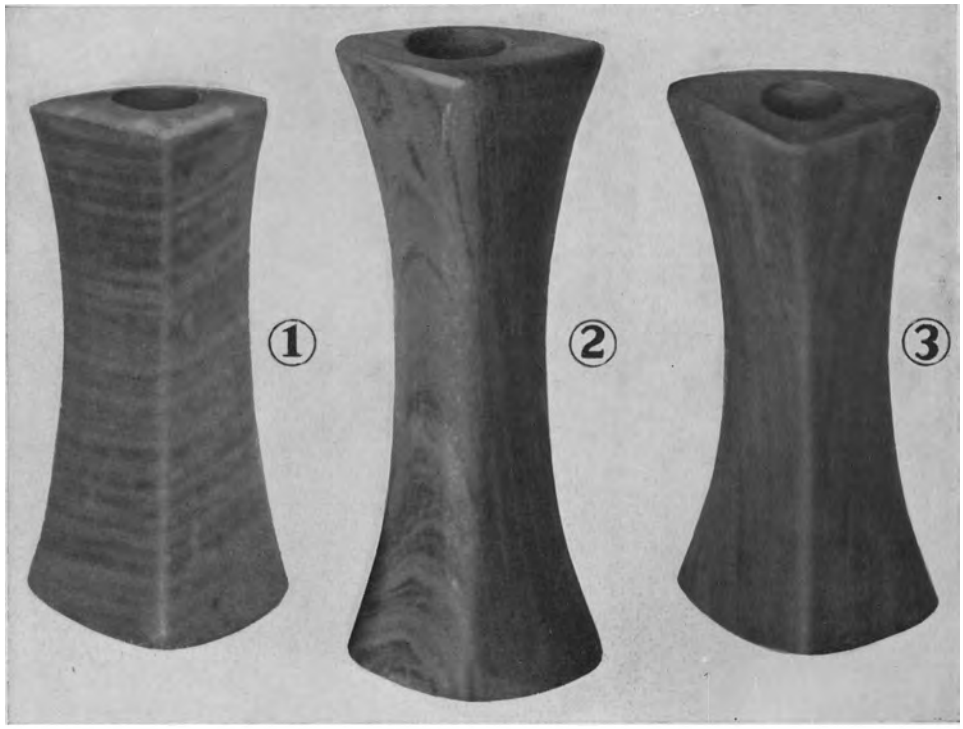


PLATE 260



TRIANGULAR TUBULAR PATTERNS, TYPE No. 32

PLATE 261.

Triangular Tubular patterns are extremely rare. Photographs of only three specimens were obtained. These are shown in the above plate.

No. 1—Indiana, County unknown. Material, banded-slate.
LATE LESLIE L. HILL COLLECTION, FT. WAYNE, INDIANA

No. 2—Wabash County, Indiana. Material, green banded-slate. Catalogue number B-33. Formerly in the E. W. Payne collection. Size 3 3/4 x 1 3/8 inches.
B. W. STEPHENS COLLECTION, QUINCY, ILLINOIS

No. 3—Hancock County, Indiana. Material, blue banded-slate. Found near the town of Greenfield. Catalogue number A5416. Size 3 1/2 x 1 1/2 inches.
Plate 5/6 actual size. E. W. PAYNE COLLECTION, SPRINGFIELD, ILLINOIS

SOME COMMENTS CONCERNING BANNER-STONES

Excerpts of paper delivered by the author before the Illinois State Academy of Science, Thirty-Second Annual Meeting, Springfield, Illinois, May 5, 1939.

Perhaps the most important question today concerning banner-stones pertains mainly to the possible uses to which they were put, and the ceremonial significance which we believe the Indians thought they possessed. For many years these questions have been dealt with only in a theoretical manner. This situation should no longer exist, even though the actual ceremonial, spiritual, legendary, and medicinal meanings which supposedly were associated with these objects are unknown. We can at this time at least be certain that they were used as ceremonial symbols, and by the perforations study the manner in which they were used to a great extent.

The ceremonial paraphernalia of the mound building people were very elaborately designed, and symbolism was extensively practiced. The embossed copper plates from the Etowah site in Georgia, and the incised shell gorgets from this area and other areas, were commonly used for the perpetuation of pictorial records and symbols. Such materials have been taken mainly from mounds, and have aided greatly in unraveling some of the past, including the portraying of the mode of living, the manner of dress, and the ceremonial customs of these people.

The embossed copper plates from Georgia of dancing figures display the elaborately designed head-dresses, feathered costumes representing the eagle, beads, ear-spools, leg and arm bands, pouches, rattles, and sceptres that were carried during the social, religious, and war-time ceremonies. It is unfortunate that the greater part of this sort of ceremonial equipment consisted of perishable materials, which have disintegrated and disappeared. See Plate 262.

It is to be regretted that no pictorial records have been discovered that might portray the Banner-stones in use, without any question of doubt. Some of the copper plates from Georgia of dancing figures do display on the head-dresses objects which appear to represent large Quartz Butterfly Banner-stones. But whether or not the objects portrayed by these pictorial records actually represent these stone symbols is rather questionable. If it were possible to associate the cultural manifestation of the mounds from which these copper plates were taken with the cultural manifestation of the banner-stones which are similar in outline to the objects displayed on the head-dress of these copper plates, one could then believe that these records actually show these symbols in use. To prove the theory that such an association exists would necessitate extensive research. Nevertheless,

there still is no doubt that many of the designs of banner-stones were created for the primary purpose of being used in connection with this sort of ceremonial equipment and, being of stone, are preserved.

Unfortunately, the presence of banner-stones in mounds is almost totally lacking, even in the areas in which cultures had reached a high degree of semi-civilization, and where the mounds and the surface of these areas furnish artifacts in abundance. For this reason, we are forced to place these objects in one group and study them alone, without any direct association with other cultural materials. It is very obvious that these stones were withheld from burials for some unknown ceremonial reason.

Usually the variations of a single design occur within a certain area. From these variations we can follow their development from the simplest to the ultimate designs. Therefore, the variations of all the different designs can be classified to certain areas, periods or phases. This fact is particularly helpful in simplifying the study of the evolution of the different variations and in tracing their origin. By observing the evolution of the different designs, we can automatically trace the travel routes which the Indians had taken from a common center.

Frequently we can observe and identify specimens that were carried far away from the area in which they were made, and in which they usually occur, by noting the materials used in their making. This source of knowledge is attained only after one becomes thoroughly familiar with the differently designed variations that are characteristic of certain areas, and with the varieties of rocks which occur within these areas.

It might be well to give at least one demonstration. For example: Occasionally under-developed patterns of ferruginous slate occur in the uppermost part of Illinois. Immediately we can identify the designs as being identical to those which occur more abundantly farther south. Furthermore, we can also identify the material as being a variety of rock which is found within the state of Kentucky and Tennessee. Therefore, it is apparent that these stray specimens were made in Kentucky or Tennessee and were carried by wandering individuals to the locality where they were discovered. By observing the lines and planes of the many variations, and the materials from which they are made, it is usually easy to identify the majority of specimens which were carried far distances.

The cultural material from one small area can be traced to another area, if a blending of two cultures had taken place, by noting the culture traits of the materials that are characteristic of such two areas. Such observations are of great importance, and very useful today. But, after the cultural material of the entire eastern half of the United States is studied as a group, it is then discovered that no other problematicals are so widely distributed, and vary so greatly in form, as the banner-stones. Therefore, when the cultural material of a certain small area closely resembles the material from a nearby area, it is often very difficult to detect the blending of the one culture into another. The banner-stones are useful in solving these particular problems because they occur over the entire mound area. The archaeologist will soon realize this fact, and in the future research in this field will be carried out far more extensively than ever before.

Figure 15. **Etowah Group: Mound C (Temple Mound). Embossed copper plate (Exploration of Bureau of Ethnology), showing dancer wearing eagle paraphernalia.**

PLATE 262. Bartow County, Georgia.* This embossed copper plate displays on top of the headdress an object that appears to be a large winged banner-stone. But, whether this pictorial record and other similiar ones actually show these symbols of stone in use still remains questionable.

Plate 1/3 actual size. *By courtesy of the Yale University Press*

*Moorehead, Warren K.: *Etowah Papers, Explorations of the Etowah Site in Georgia*, New Haven, Connecticut, Phillips Academy, Yale University Press, 1932.

Pike County, Illinois. Material, ferruginous quartz. This specimen is illustrated in Plate 134 under No. 4.

FROM THE AUTHOR'S COLLECTION

ATLATL OR THROWING STICK THEORY

Information of the recent discoveries by Dr. Wm. S. Webb, of hooked objects of antler and banner-stones associated together in burials at various sites in Kentucky, and evidence of similar cultural traits in northern Alabama, was received a short time before this volume went to press. Immediately a letter was sent to Dr. Webb, asking if he would describe in a short article these discoveries and advance his theory for the uses to which the banner-stones were put. This request was kindly granted, and the article received appears on page seventy-four.

The hooked objects of antler discovered by Dr. Webb are similar to those found by Prof. Clarence B. Moore* at Indian Knoll, Kentucky, in 1915, which were at that time described as being "netting needles." Dr. Webb† has advanced a very worthy theory for the use of these objects in conjunction with the banner-stones in the report *The Chiggerville Site.* In this report he explains that the recent discoveries suggest that the so-called "netting-needles" were not used for that purpose, but were the "distal ends of atlatls or throwing sticks," and the banner-stones which Prof. Moore believed were "mesh-spacers," were atlatl weights, attached to give the throwing sticks balance and power. This hypothesis may in the near future prove that at least some banner-stones (particularly the under-developed patterns from the Southern Area) had a definite utilitarian purpose.

The writer has discussed the discoveries and theories by Prof. Moore, in the chapter *Banner-stones from Indian Knoll, Kentucky*, and all of the hooked objects of antler and the banner-stones found at this site are illustrated. According to the writer's method of classification, the banner-stones taken from these burials consist mainly of blending forms, and are of remote antiquity.

*Moore, Clarence B.: *Some Aboriginal Sites on Green River, Kentucky*, Journal of the Academy of Natural Sciences. Second Series, Philadelphia, Pennsylvania, Vol. XVI, Part 3, 1616.

†Webb, Wm. S.: *The Chiggerville Site*, Reports in Anthropology, The University of Kentucky, Lexington, Kentucky, Vol. IV, No. 1, 1939.

By referring to Plate 96 one can note that the specimens Nos. 1, 2 and 12 are very similar in shape to some of the early made patterns that occur within the Primary Area. It is, however, very possible that these specimens were made in the northern part of Alabama or Georgia, or the western part of South Carolina, and were carried from there to the locality where they were discovered. Usually it is quite easy to identify specimens carried far distances by noting the materials from which they are made, but in this case it is difficult to do so. But the construction of these three patterns suggest that they were made during an early phase of the Banner-stone Era. The remaining specimens found in the burials at this site show a higher development, and were made during a later phase.

In the publication *Some Abriginal Sites on Green River, Kentucky*, Prof. Moore also includes an illustration of a highly developed Quartz Butterfly banner-stone that was found on the surface at the Indian Knoll site. This specimen is shown in Plate 96 under No. 11. It is very obvious that this object was made during a still later cultural manifestation than those found in the burials. The difference of construction can be noted by a comparison of this specimen to the one shown under No. 10.

Since evidence of the hooked objects of antler and the banner-stones have been found in northern Alabama (which is part of the section of the country the writer charted as being the common center of origin for banner-stones) it is very possible that these early made objects were occasionally used as atlatl weights. The theory by Dr. Webb is possibly the most logical one so far advanced.

The writer does not wish to contradict the theory that the hooked objects of antler were the distal ends of throwing sticks, because he has not had an opportunity to examine any of these specimens. Furthermore, it is only natural to assume that the banner-stones found with these antler objects were part of this sort of equipment. But the writer desires to mention some very important questions and conclusions concerning this hypothesis that should be considered before it is accepted or adopted for the proposed purpose of banner-stones in general. These questions are numerated as follows:

First: If the hooked objects of antler and the banner-stones found associated together were used in conjunction with each other as atlatls or throwing sticks; why were not arrow-points or spear-heads of bone

or flint found in the burials where they occur? If these so-called atlatls were placed in burials with the supposition that they would accompany the deceased to the "Happy Hunting Grounds," then how could the departed hunt upon their arrival?

Second: If all the banner-stones are to be regarded as throwing stick weights, and supposedly were used before the advent of the bow, then the entire mound area (the eastern half of the United States) was inhabited before the bow was brought into use. Furthermore, it is very probable that banner-stones were ceremonially used until early historic times. Perhaps it may be more plausible to believe that, although the banner-stone may have its origin in connection with the atlatl, it had undergone a long period of development and elaboration until it doubtless occupied an important place in the artistic and ceremonial life of these people. If some of the more highly developed specimens that are found farther north and which were made during the latter phase of the Banner-stone Era, were placed upon atlatls, it was only done ceremonially.

Third: A large percentage of the banner-stones from the Heart Area are extremely fragile, and many are too large and cumbersome to be conveniently used as weights on throwing sticks. The perforation through many specimens is no larger in diameter than a lead pencil. It seems unlikely that such objects could be used upon atlatls successfully, because these implements had to be quite sturdy to withstand the use to which they were put. The perforations through the banner-stones from the Southern Area will average a larger size than those found farther north. This fact may help to substantiate the theory that only the early made patterns were placed upon utilitarian throwing sticks, and not those which are highly developed.

Fourth: The hooked antler objects so far discoverəd were associated mainly if not solely with underdeveloped banner-stones, many of which are probably of remote antiquity. The discovery of the twelve Knobbed Lunate specimens found broken or "killed" in a mound in Madison County, Illinois, may help prove that highly developed patterns such as these were used but ceremonially, and no hooked objects of antler were present. One of the Knobbed Lunate specimens mentioned above is shown in Plate 4. Another demonstration is the two banner-stones taken from a Red Paint Burial, that are shown in Plate 101.

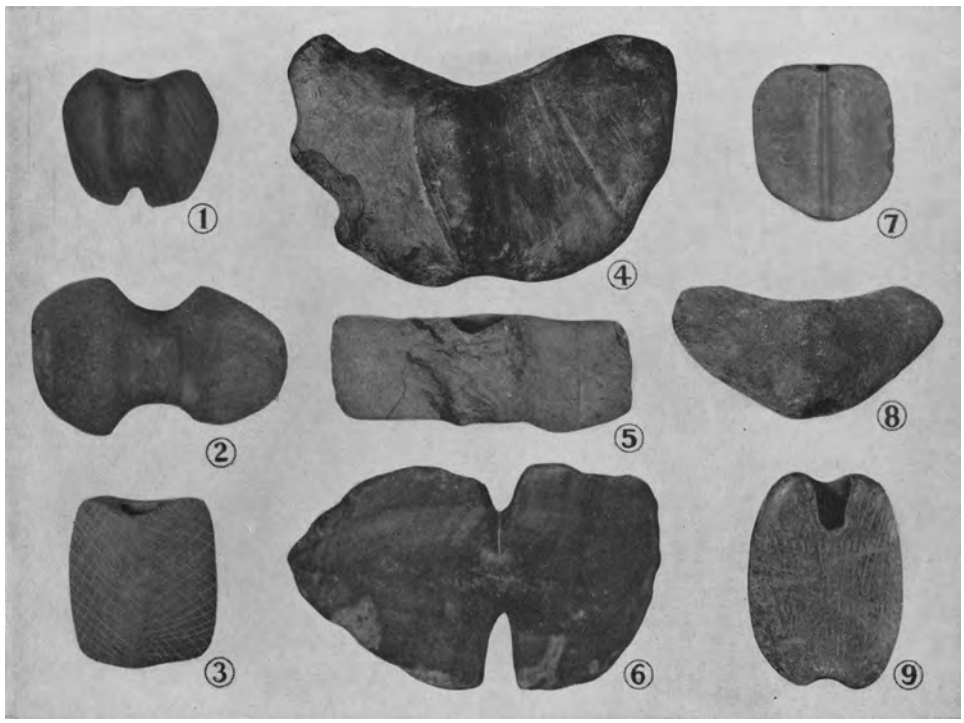
Fifth: If we regard banner-stones as being atlatl weights and were made *exclusively* for that purpose, we must then assume that each adult male Indian possessed one of these implements. Before this conclusion is adopted a very important question must be considered: why are the stone axes probably a hundred times more plentiful than the banner-stones? Furthermore, some of the banner-stones found by Prof. Moore were associated with skeletonal remains of women and children.

Sixth: Prof. H. S. Cowper* has suggested that it seems as though the atlatls were sometimes used ceremonially by the Indians of northern South America, Central America, and the Aztecs of Mexico, and are frequently pictured on monuments in the hands of mythological gods. Therefore, we might assume that atlatls were frequently used ceremonially in North America, particularly those with banner-stones attached.

Seventh: After careful consideration of the questions and conclusions mentioned, the writer shall express his views concerning this subject. The evidence so far discovered does not substantiate the theory that banner-stones were made for utilitarian purpose alone, even though some of the early made patterns were used in conjunction with the objects which supposedly were atlatl ends. The mere fact that the twenty-two and one-half banner-stones discovered by Prof. Moore were ceremonially "killed," and also that parts of some eight others were too fragmentary for restoration, indicates that they were not mere implements. Even though banner-stones were occasionally placed on atlatls as weights, or were so placed because it was believed the spiritual power of these stones would assure the possessors accuracy of aim, or were worn ornamentally, there still is no reason why these various uses should detract from their ceremonial significance.

The altatls that were made for general use were undoubtedly made from one piece of wood. But the so-called atlatls from Indian Knoll, Kentucky, and other sites which were equipped with an antler hook and decorated with a banner-stone do not seem to be a practical implement, mainly because of the flimsy manner in which the conically drilled hooks were attached to the handles. Throwing sticks of this construction would soon come apart if put to use. For this reason we may assume that if banner-stones were attached to atlatls they were used but ceremonially.

*Cowper, Prof. H. S.; F.S.A.: *The Art of Attack*, W. Holmes, Ltd., Printers, Ulverston, England, 1905.



MISCELLANEOUS BANNER-STONES

PLATE 263. Crudely made, and small insignificant specimens.

No. 1—MIAMI COUNTY, OHIO. Material, blue banded-slate.
Arthur R. Altick collection, Springfield, Ohio

No. 2—MISSOURI, County unknown. Material, ferruginous quartz.
From the author's collection

No. 3—UNION COUNTY, KENTUCKY. Material, pink sandstone, drilled from each end with a flint-drill. *Fain White King collection, Ancient Buried City, Wickliffe, Kentucky*

No. 4—CHESTER COUNTY, PENNSYLVANIA. Material, soapstone, discolored from age.
C. H. Thomas collection, Kennett Square, Pennsylvania

No. 5—BURLINGTON COUNTY, NEW JERSEY. Material, trap rock, badly disintegrated.
Dorothy E. Middleton collection, Moorestown, New Jersey

No. 6—Locality unknown. Material, banded-slate.
Logan Museum, Beloit College collection, Beloit, Wisconsin

No. 7—TENNESSEE, County unknown. Material, greenish gray slate.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 8—CAYUGA COUNTY, NEW YORK. Material, sandstone. Negative No. 13/2109.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 9—CONNECTICUT, County unknown. Material, steatite. Catalogue number 7/32.
The American Museum of Natural History collection, New York, N. Y.

Plate 1/2 actual size.

EXPLANATION OF PLATE 264

MISCELLANEOUS BANNER-STONES

This plate is composed of photographs of interesting specimens that were received too late to be included in the plates showing the classified patterns arranged into groups.

Plate 5/12 actual size

No. 1—Greene County, Indiana. Material, red hematite. Triangular blending form. Catalog number 81. Acc. No. 7.
Indiana Historical Society collection, Indianapolis, Indiana

No. 2—Vigo County, Indiana. Material, light brown sugar quartz, discolored from age. Single-face Bottle blending form. Catalogue number 9. Acc. No. 26.
Indiana Historical Society collection, Indianapolis, Indiana

No. 3—Vigo County, Indiana. Material, ferruginous quartz. Single-face Bottle blending form. Catalogue number 8. Acc. No. 26.
Indiana Historical Society collection, Indianapolis, Indiana

No. 4—Clay County, Arkansas. Material, cream colored sugar quartz, discolored from age. Collected by the author. Single-face Bottle blending form.
Con Foster Museum collection, Traverse City, Michigan

No. 5—Barron County, Wisconsin. Material, dark green finely grained granite. Found by Ira E. Thomas in Lake Twp. Sec. 22. Range 10 W. in 1900. Quartz Butterfly blending form. *Joseph Ringeisen, Jr. collection, Milwaukee, Wisconsin*

No. 6—Clark County, Indiana. Material, light tan quartz, highly polished. Catalogue number 32. Acc. No. 219. The cross section of this specimen is oval, and it can be classified as a Tubular Type No. 31.
Indiana Historical Society collection, Indianapolis, Indiana

No. 7—Calhoun County, Illinois. Material, brown quartz. Found in the shallow water between Twelve Mile Island and the Calhoun County Shore in 1936. Quartz Butterfly Type No. 16. *Dr. P. F. Titterington collection, St. Louis, Missouri*

No. 8—Johnson County, Indiana. Material, green banded-slate. Notched Ovate Type No. 27. *B. W. Stephens collection, Quincy, Illinois*

No. 9—Allegan County, Michigan. Material, green banded-slate. Catalogue number 218. Notched Ovate Type No. 27.
Wilbur M. Cunningham collection, Benton Harbor, Michigan

No. 10—Tennessee, County unknown. Material, conglomerate granite, incompleted drilling. Hour-glass blending form. *Philip C. Schupp collection, Chicago, Illinois*

No. 11—Posey County, Indiana. Material, brown banded clay stone. Hour-glass blending form. *B. W. Stephens collection, Quincy, Illinois*

No. 12—Camden County, New Jersey. Material, mottled granite. Unfinished Notched Crescent blending form.
Museum of the American Indian, Heye Foundation collection, New York, N. Y.

No. 13—Texas County, Missouri. Material, red hematite. Wisconsin Winged blending form. *Kyle L. Sly collection, St. Louis, Missouri*

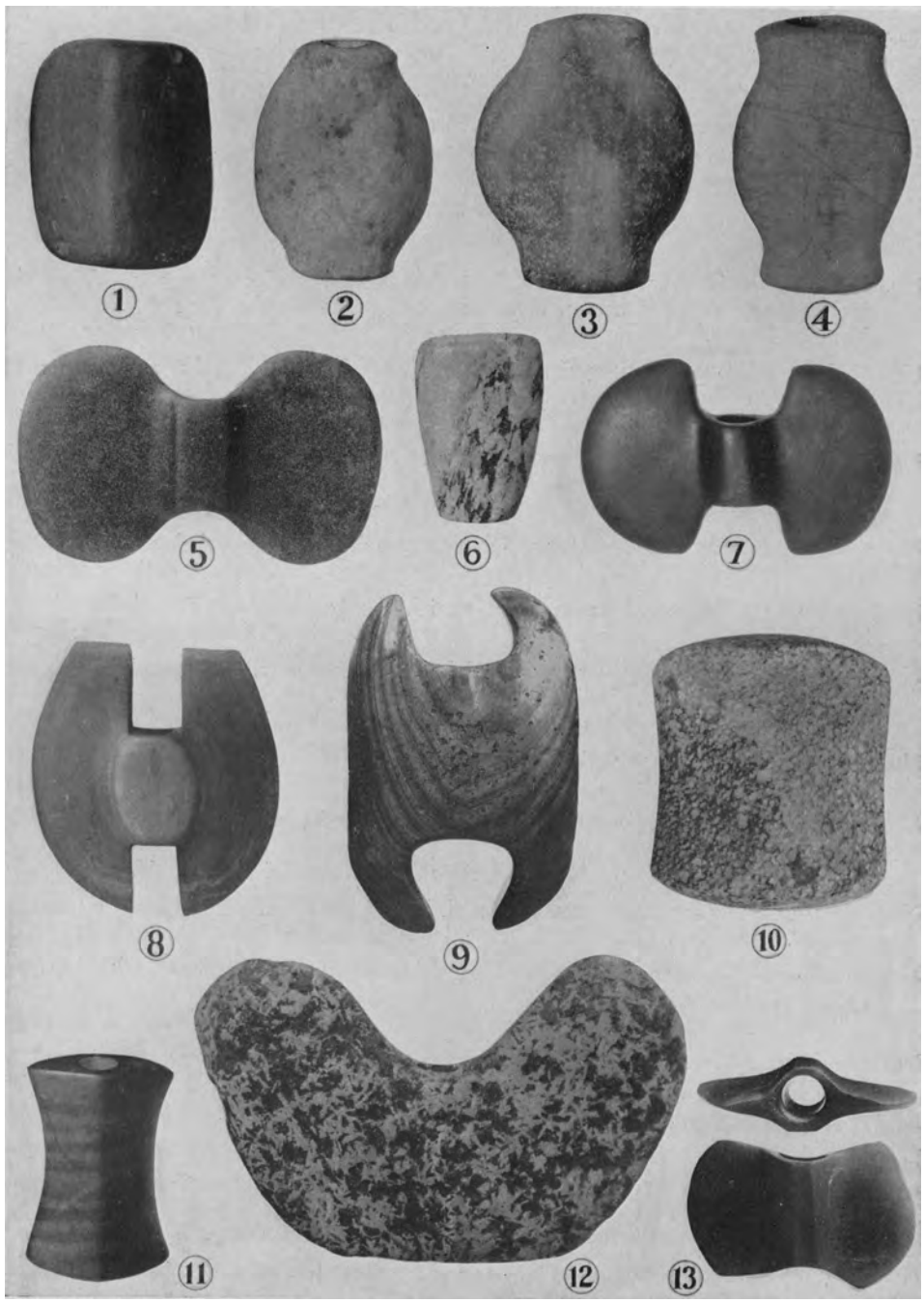


PLATE 264

EXPLANATION OF PLATE 265

MISCELLANEOUS BANNER-STONES

This plate is composed of photographs of interesting specimens that were received too late to be included in the plates showing the classified patterns arranged into groups.

Plate 1/2 actual size

No. 1—INDIANA, County unknown. Material, white translucent quartz. The face is fluted, and one end has an identation that was made for the start for drilling. Humped Group. *From the author's collection*

No. 2—UNION COUNTY, KENTUCKY. Material, banded-slate. Found near the town of Uniontown. Paneled Group.
Mrs. Blanche Busey King collection, Ancient Buried City, Wickliffe, Kentucky

No. 3—HENRY COUNTY, TENNESSEE. Material, dark brown limonite. Found near the town of Paris. Triangular blending form.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 4—PALASKA COUNTY, ARKANSAS. Material, black and tan mottled steatite. Fluted Tubular pattern. *From the author's collection*

No. 5—HINSDALE COUNTY, MICHIGAN. Material, blue banded-slate. Double Bitted Axe blending form. *From the author's collection*

No. 6—HENDERSON COUNTY, KENTUCKY. Material, tan quartzite, streaked with black, disintegrated from age. Saddle-face Type No. 7.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 7—JAY COUNTY, INDIANA. Material, banded-slate. No evidence of drilling. Double Bitted Axe blending form. *From the author's collection*

No. 8—GRAVES COUNTY, KENTUCKY. Material, ferruginous slate. Single-face Bottle blending form.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 9—ST. CLAIR COUNTY, ILLINOIS. Material, ferruginous quartz. Found east of Cahokia Mound. Hourglass Type No. 6. *C. C. Benedict collection, Decatur, Illinois*

No. 10—BENTON COUNTY, TENNESSEE. Material, green quartzite covered with a brown patina. Saddle-face Type No. 7.
Mrs. Blanche Busey King, Ancient Buried City, Wickliffe, Kentucky

No. 11—HOPKINS COUNTY, KENTUCKY. Material, ferruginous slate. Humped blending form. *From the author's collection*

No. 12—FAYETTE COUNTY, INDIANA. Material, ferruginous quartz. Catalogue number 1, Acc. No. 26. *Indiana State Historical Society collection, Indianapolis, Indiana*

No. 13—MASSAC COUNTY, ILLINOIS. Material, brownish red opaque quartz. Quartz Butterfly Type No. 16.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 14—WAYNE COUNTY, ILLINOIS. Material, white quartzite, discolored from age. No evidence of drilling. Bi-face Bottle pattern. *From the author's collection*

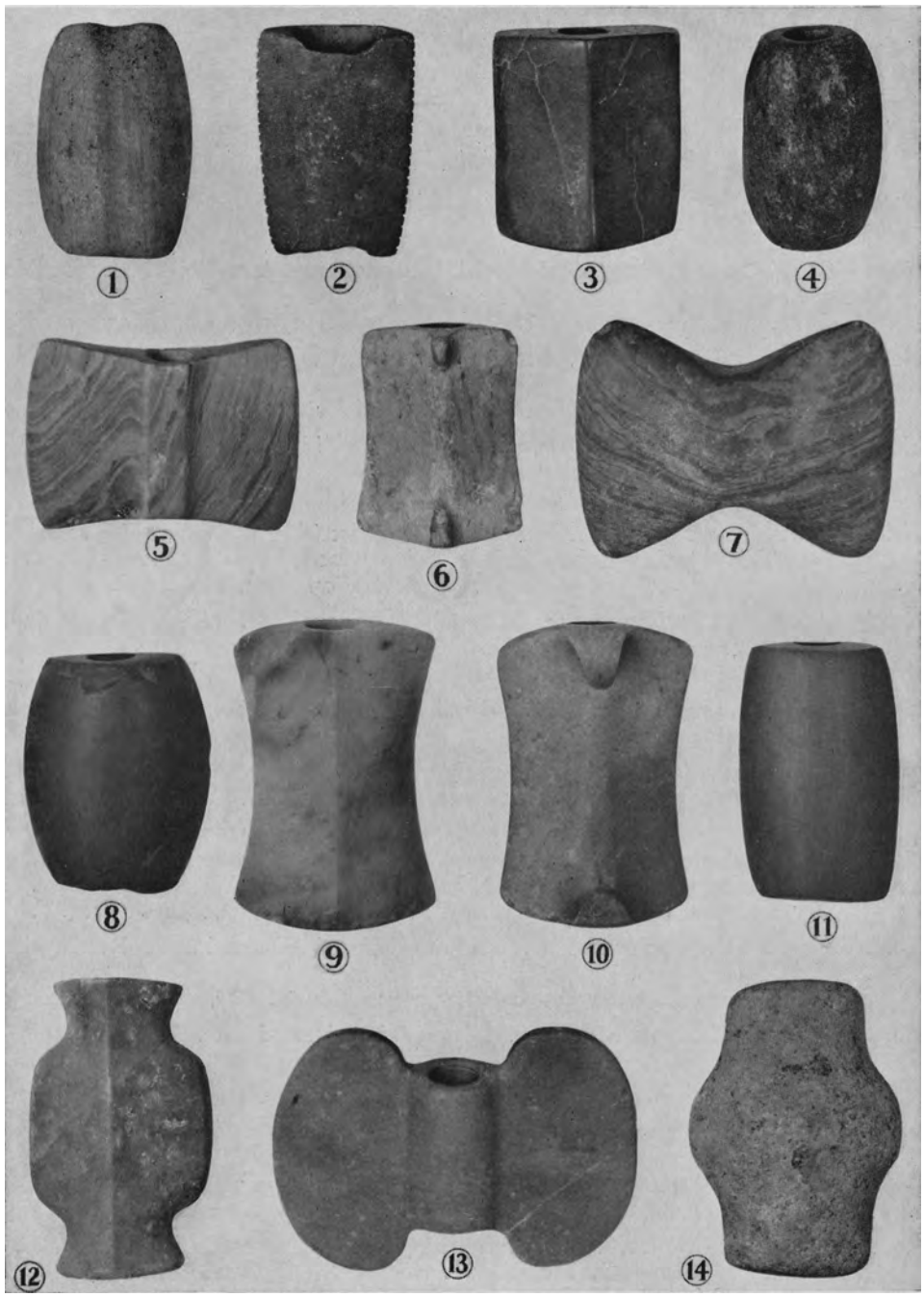


PLATE 265

EXPLANATION OF PLATE 266

MISCELLANEOUS BANNER-STONES

This plate is composed of photographs of interesting specimens that were received too late to be included in the plates showing the classified patterns arranged into groups.

Plate 2/5 actual size

No. 1—OHIO, County unknown. Material, banded-slate. Acc. No. 20/51. Double Crescent type specimen.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 2—FRANKLIN COUNTY, OHIO. Material, banded-slate. Acc. No. 251/160. Double Crescent type specimen.
The Ohio State Archaeological and Historical Society collection, Columbus, Ohio

No. 3—MARSHALL COUNTY, KENTUCKY. Material, reddish tan quartzite, hollow reed drilling 1/16 inch deep. Tubular pattern.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 4—NORTHHAMPTON COUNTY, PENNSYLVANIA. Material, green and white speckled granite. This object might be a Humped primary carried from the Primary Area.
W. C. Fuellhart collection, Tidioute, Pennsylvania

No. 5—GRAVES COUNTY, KENTUCKY. Material, ferruginous slate. Hollow reed drilling, 1/8 inch deep.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 6—ALLEN COUNTY, INDIANA. Material, light tan indurated clay-stone. Fluted Ball Tubular blending form. *From the author's collection*

No. 7—NEW YORK, County unknown. Material, greenish gray slate, discolored from age. Hollow reed drilling 1/4 inch deep. Found in 1895. Unfinished Notched Crescent type specimen. *Dr. B. J. Moss collection, East Tawas, Michigan*

No. 8—NORTH CAROLINA, County unknown. Material, probably trap rock. No evidence of drilling. Negative No. 785-2526. Notched Ovate (Lower Alleghaney) pattern.
Museum of the American Indian, Haye Foundation collection, New York, N. Y.

No. 9—HICKMAN COUNTY, KENTUCKY. Material, dark red unbanded slate. Rectangular Barreled blending form.
Mrs. Blanche Busey King collection, Ancient Buried City, Wickliffe, Kentucky

No. 10—HINSDALE COUNTY, MICHIGAN. Material, blue banded slate. Tubular pattern, type No. 31. *G. I. Groves collection, Chicago, Illinois*

No. 11—RANDOLPH COUNTY, ILLINOIS. Material, mottled chlorite. Humped blending form.
Mrs. Blanche Busey King collection, Ancient Buried City, Wickliffe, Kentucky

No. 12—MISSISSIPPI COUNTY, MISSOURI. Material, red hematite. Solid stick drilling 1/2 inch deep. Probably intended to be made into a Humped blending form.
Fain White King collection, Ancient Buried City, Wickliffe, Kentucky

No. 13—RANDOLPH COUNTY, ILLINOIS. Material, gray and tan speckeled granite. Hollow reed drilling 3/4 inch deep. Probably intended to be made into some blending form.
Mrs. Blanche King collection, Ancient Buried City, Wickliffe, Kentucky

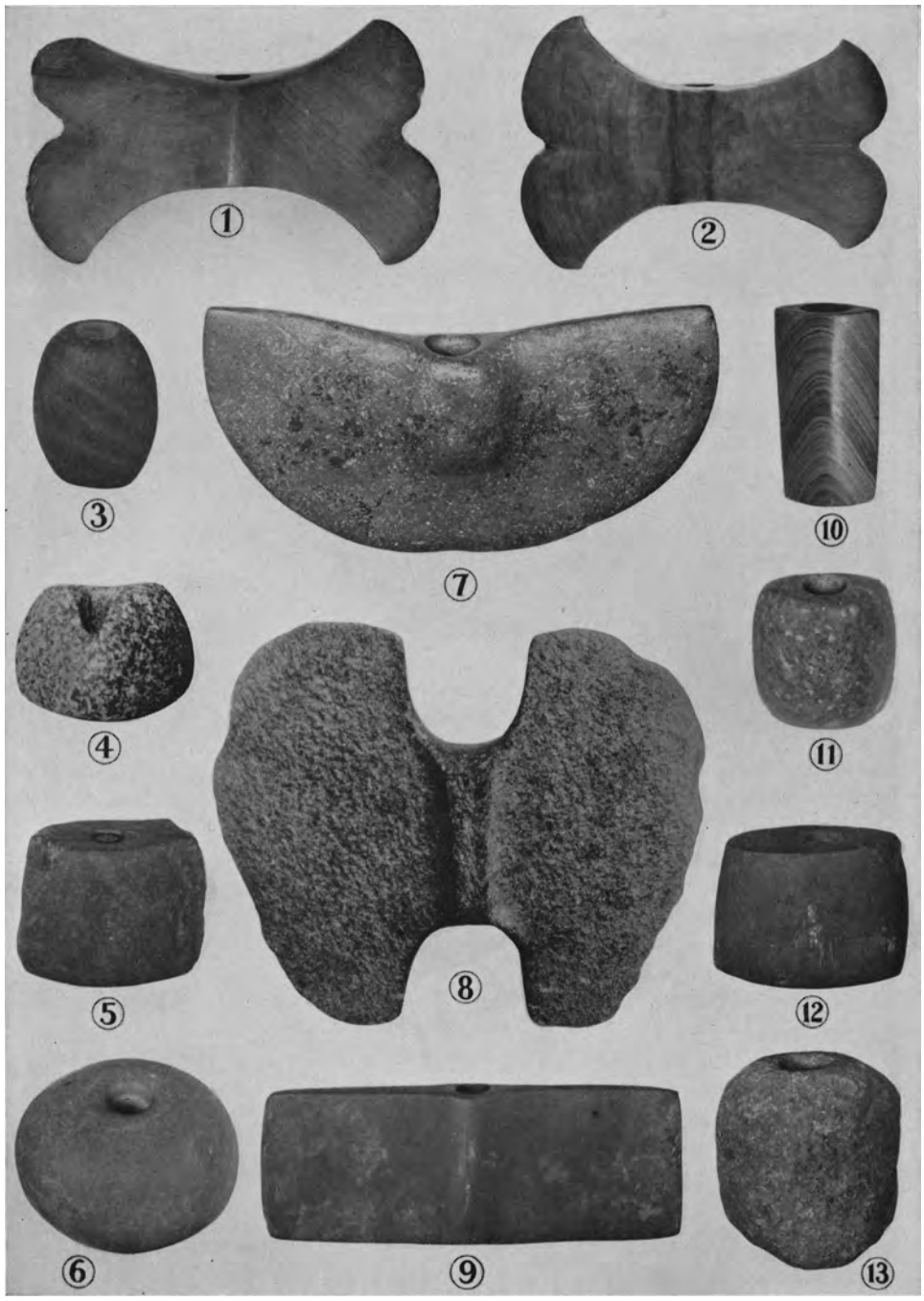
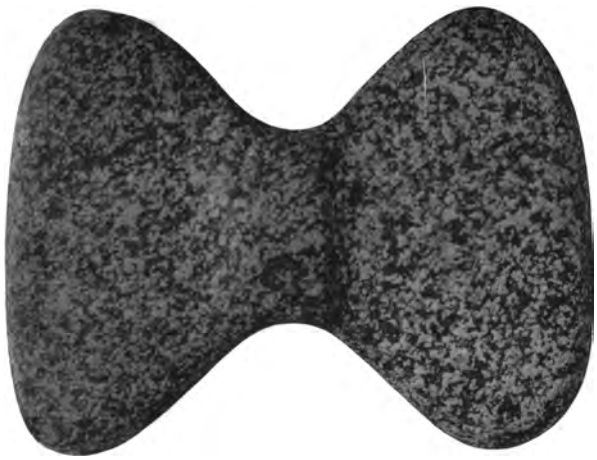


PLATE 266



Calhoun County, Illinois. Material, spotted granite. This specimen is illustrated in Plate 202. FROM THE AUTHOR'S COLLECTION

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Pike County, Missouri. Material, ferruginous quartz. This specimen is illustrated in Plate 249. DR. TITTERINGTON'S COLLECTION

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Wuhlenburg County, Kentucky. Material, black and white speckled granite. This specimen is illustrated in Plate 142. Plate 3/4 actual size. FROM THE AUTHOR'S COLLECTION

FINAL COMMENTS

In the month of February, 1935, the writer undertook the task of preparing this volume on Banner-stones. Four years have now been devoted to this work, including the assembling of over 1650 individual photographs of specimens which are scattered over the country, preparing these pictures in groups from which the plates were made, making a large number of pen-and-ink drawings, and writing the text.

Although this task has been a rather arduous undertaking, it has been a source of very great pleasure. It is my sincere hope that those who will read this work will receive from it much enjoyment. If the writer has been able to contribute something worth while to archaeology concerning these interesting objects made by vanished cultures, he will regard it as a worthwhile reward for his efforts.

Byron W. Knoblock

Keokuk County, Iowa. Material, mottled granite. This specimen is illustrated in Plate 202. BEN NEUSBAUM COLLECTION

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