

HOPEWELL CULTURE BURIAL  
MOUNDS NEAR HELENA,  
ARKANSAS

JAMES A. FORD

VOLUME 50 : PART 1  
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# HOPEWELL CULTURE BURIAL MOUNDS NEAR HELENA, ARKANSAS

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## INTRODUCTION

THE HELENA CROSSING SITE was discovered by James B. Griffin, Philip Phillips, and the writer in 1940 in the course of an archeological survey we were then making in the alluvial valley of the Mississippi River.<sup>1</sup> Local residents were unaware that this was a prehistoric site, an understandable error, because the five mounds that then composed the group were situated on

manding position at terminus of ridge with fine view of river and valley."

The sketch map made of the site at the time of discovery is reproduced in Fig. 1, with minor modification. The five almost conical mounds, varying little in size, were approximately 100 feet in diameter and 15 to 20 feet high. Mound A, located on flat land at the foot of the ridge,

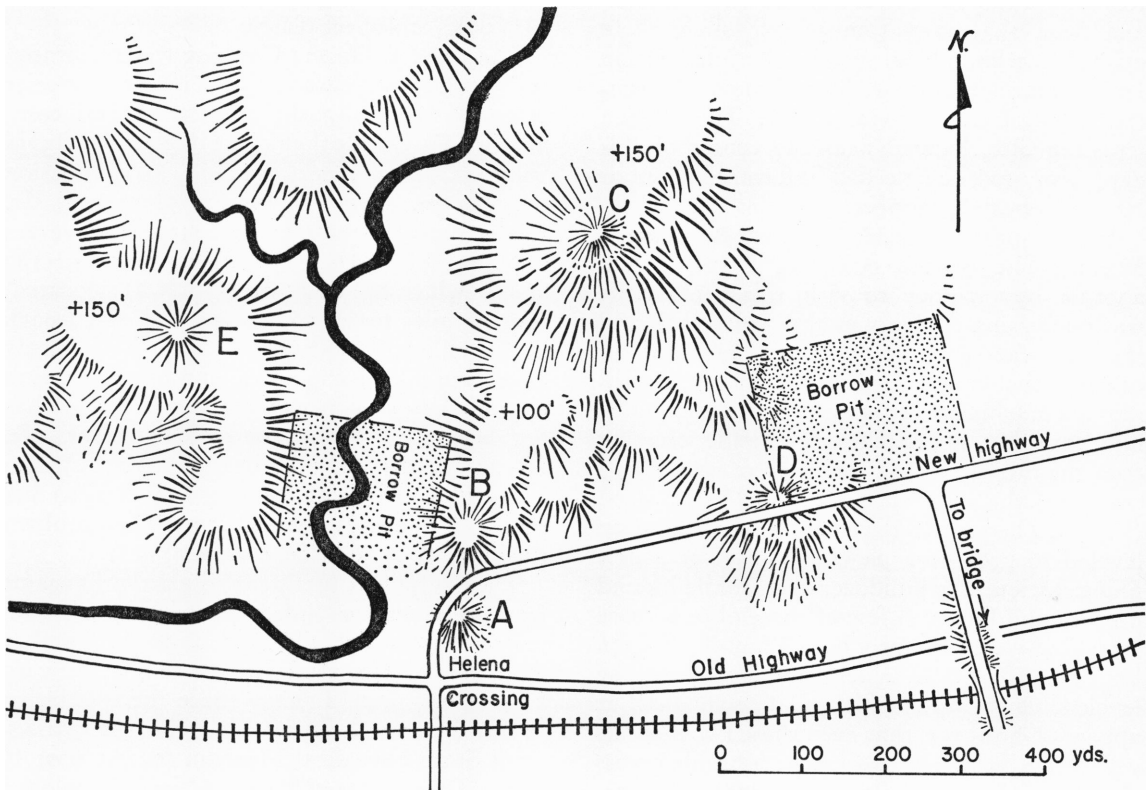


FIG. 1. Sketch map of the Helena Crossing Site, showing the locations of the five conical mounds that existed in 1940. The location of the new highway, the approach to the Mississippi River bridge, and borrow pits have been added to the original drawing.

the southeastern edge of Crowley's Ridge, and the loess soil that caps this ridge had eroded into deep gullies, leaving narrow rounded ridges that in some cases resembled mounds. The archeological surveyors, however, were very much impressed; the field notes conclude: "A very spectacular site, mounds occupying a com-

was 20 feet high; heights of the other mounds were difficult to judge, for they surmounted the tops of narrow, rounded fingers of Crowley's Ridge."<sup>2</sup>

Sherds and flint chips were very scarce either on or about the Helena Crossing mounds. This fact, as well as their shapes and location, con-

<sup>1</sup> Phillips, Ford, and Griffin, 1951.

<sup>2</sup> The site is in the northwest corner of irregular survey 491, T. 2 S., R. 5 E.



vinced the surveyors that these were burial structures of the Hopewell-Marksville cultural period. However, this was only an opinion, and as opinions cannot be seriated like potsherd collections, the Helena Crossing Site received very brief mention in the report of the survey in which it was listed as 14-N-6.<sup>1</sup>

Our special interest in the Helena Crossing Site derives from the fact that, although the burial complex of the Hopewell culture as it existed in Illinois is well known, and the closely related Marksville culture is known in Louisiana from the excavation of two sites, there existed a geographical gap in our information approximately 400 miles long through the central part of the alluvial valley. The Helena Crossing Site, located near the center of this gap, promised the needed information about Hopewell burial practices.

In the spring of 1958, while excavating the Menard Site on the Arkansas River, I had another opportunity to visit this locality. It was depressing to discover that it had suffered the same fate that has overtaken hundreds of other archeological sites since heavy, earth-moving machinery came into common use. The highway that approaches the grade crossing over the railway tracks had been re-routed and traversed the spot where Mound D had stood (Fig. 1). The preceding year Mound A had been leveled to provide a parking apron for a new filling station. The bulldozer operator had found pottery and bones. A few of these objects were saved but were promptly lost. A house had been built on Mound E which had been partially leveled. Only Mounds B and C remained. It appeared, however, that even these two mounds would not be long undisturbed. A bridge across the Mississippi River was in process of construction, and the approach road ran into the foot of the bluff in front of the mound site. To the east and west of the remaining mounds large areas had been leveled by the borrowing of earth for road construction, and these areas were soon to be occupied by tourist courts.

<sup>1</sup> Phillips, Ford, and Griffin, 1951, 50. The statement that this was a "large village site" is one of those unfortunate errors that creep into some tabulations.

Excavation of Mounds B and C of the Helena Crossing Site was begun September 12, 1960, and field-work was concluded December 20 of that year. The crew consisted of from seven to 10 laborers working under my direction and that of Asa Mays, Jr., a graduate student in anthropology from the Ohio State University. James Hulsey of Helena assisted in the clearing of tombs and other special work. Excavation was begun in an oppressive heat wave, and the trowel work on the last four log-roofed tombs was done in freezing rain inside a tent enlarged with poles and sheet plastic.

The work at Helena Crossing was facilitated and made very pleasant by the many courtesies extended to us by the citizens of this community. Particular thanks are due to Mr. David Solomon, the owner of the land, for permission to excavate, and to his plantation manager, Mr. James Bales, for numerous courtesies. We are also grateful to Mrs. James Pillow who owns the land in which the Bouie Site (14-N-4) is located, several miles to the southwest. Our test trench in this village demonstrated that it is of slightly later date than the mounds, and for that reason an analysis of the material recovered there has not been included in the present paper. Mr. Lawson Anderson, Vice-President and Cashier of the Helena National Bank, helped us to find places to live and solved many of the problems that always arise in field-work.

The equipment used for this excavation came from the very complete cache of tools and instruments which Philip Phillips and Stephen Williams of the Peabody Museum, Harvard University, and I have been accumulating under the care of Stuart Neitzel of the Mississippi State Historical Museum for the past 10 years. The borrowed Harvard "jeep," equipped with a winch, was particularly valuable in this unusually wet season.

This field-work was financed by the Frederick G. Voss Anthropological and Archeological Fund of the American Museum of Natural History. To Miss Bella Weitzner I am grateful for her usual competent job in correcting the manuscript. Mr. Nicholas Amorosi made the line drawings.

## PHYSIOGRAPHY

THE NORTHERN HALF of the alluvial valley of the Mississippi River is about 80 miles wide. The monotonous, flat terrain is sharply defined by steep bluffs, 100 to 150 feet high, that mark the edge of the hills to the east and west. The most prominent geographical feature is Crowley's Ridge, a narrow ridge clearly defined on each side, extending for 200 miles from the vicinity of Helena, Arkansas, almost to the head of the alluvial valley at Cairo, Illinois. Between Crowley's Ridge and the bluffs to the east lies the modern flood plain of the Mississippi River, scarred with its old channel courses as well as with fragments of earlier surfaces laid down by the Ohio River before the beginning of the Christian Era.

West of Crowley's Ridge lie the western lowlands, now occupied principally by streams that provide local drainage. This flat surface, which slopes a little more steeply than the valley east of the ridge, is covered with the scars of braided courses of the Mississippi River occupied from approximately 6000 years ago to 2000 years ago when the Mississippi joined the Ohio River and the combined stream first occupied the eastern half of the valley.

Crowley's Ridge is the same formation as the hills that border the alluvial valley to the east and west. The most recent part of it, the southern end, dates from the Sagamon interglacial period which preceded the last advance of the ice, and the soils forming the ridge are older as one proceeds northward. This ridge was substantially carved into its present form at the time of the late Wisconsin ice. Sea level was lowered by the large volume of water imprisoned in the ice. The Mississippi flowed to the west of the Crowley divide and lay in a valley 180 feet deeper than the present surface; the Ohio, to the east of this divide, cut down to a similar depth.

Crowley's Ridge is also similar to the hills on the western and eastern sides of the valley in that it is capped with loess, a highly calcareous soil of very limited range of grain size that stands in vertical banks for long periods of time. The shells of living forms of land snails are commonly found in this soil. The peculiar characteristics of loess are due to the fact that the soil grains are cemented together by lime

deposits. When this bond is broken, as by traffic in a dirt road, the soil is quickly removed by wind and water action. Old roads through loess-covered hills are typically narrow trenches 10 to 15 feet deep, in which the dust from a passing vehicle will hang for half an hour.

There are two theories as to the formation of loess. The traditional explanation is that the soil was deposited by wind during dry intervals of the Pleistocene. R. J. Russell has advanced an explanation which to this writer appears somewhat more plausible to the effect that loess was formed from the back-swamp clays in the pre-Wisconsin terraces that flank the entrenched valley.<sup>1</sup> The process involves a down-slope creep of these old, fine-grained soils and re-cementing of the grains by calcium deposits. This process is termed "loessification." Russell also points out that "deloessification" likewise occurs. As a normal weathering process, the cementing material is leached from the top stratum of these formations, leaving a brown loam.

While cutting the first four slices on the northern edge of Mound C, we were somewhat puzzled as to the identification of the old surface upon which the mound had been constructed. Consequently, the trenches were cut somewhat deeper than was necessary under the impression that the zone of redeposition of lime concretions was the old surface. This ignorance of the characteristics of a loess soil profile was corrected by our trimming the 12-foot-high vertical wall of the borrow pit that had recently been excavated to the west of Mound C. The surface at the point selected had about a 15-degree slope, and a humus layer was missing. Here, the top 2.6 feet of soil was a homogeneous, fine-grained, brown loam. Some snail shells were scattered in this brown loam. This obviously is the zone from which the lime that characterizes these loess soils has been leached. This soluble material had been redeposited in the 6 feet of soil underlying the brown loam. This soil was mottled brown and white and contained numerous calcareous nodules that tended to be concentrated in the lower half of this zone. Most of the nodules were about the size of a pea, but

<sup>1</sup> Russell, 1944.

several were 2 to 3 inches long. The larger nodules tend to be elongated and had apparently formed about casts from which small rootlets had rotted.

The parent soil, encountered at a depth of 8.6 feet, was light buff in color, with thin, parallel, wavy bands of reddish brown soil running through it horizontally. This might be interpreted as a laminated soil deposited in quiet water that had been distorted by solifluction.

Although the excavation of Mound C adds nothing to the moot question of the origin of loess, it does provide some evidence as to the rapidity with which this soil is leached by percolating water. We now have a sufficient number of radiocarbon dates for Hopewell to be certain that the mound was constructed about 2000 years ago. The mound, which had a rather steep slope, was situated on the crest of a hill so that the drainage was good, as was demonstrated by the relative dryness of the soil during an unusually wet fall season. Brown leached soil forms a cap about 2 feet thick on the north side of the mound; on the south side, leaching has taken place only in the upper foot. No basket loading is discernible in this upper layer. The

color differentiation of separate loads, which shows so clearly in the core of the mound, has been erased.

Redeposition of calcareous concretions occurred throughout the body of the mound. Calcareous material was deposited on shell dippers, beads, potsherds, and animal and human bones. Some of the deposits were thick enough to obscure the decoration on potsherds and were about as hard as mortar.

Fisk has estimated that at the beginning of the Christian Era the Mississippi River lay against the edge of Crowley's Ridge below the Helena Crossing Site.<sup>1</sup> It seems very probable that this is correct and that when these mounds were built the area of the site provided a spectacular view of the Mississippi. This same channel of Stage 2 curved around the southern tip of Crowley's Ridge and passed the location of the Bouie Site (14-N-4). The relative cultural dating of this small dwelling area follows very slightly after the period of the Helena Crossing Site. It too seems to have been placed on the bank of the Stage-2 Mississippi.

<sup>1</sup> Fisk, 1944, Pl. 22, Sheet 6.



## MOUND C

### EXCAVATION

EXCAVATION OF MOUND C was begun on September 2. This mound was slightly oval (Fig. 2), a shape probably explained by the steep hill slopes that lay on the northeastern and southwestern sides. The long axis of the structure extended northwest-southeast: consequently, the 5-foot grid was laid out to align. The east-west base line, so called for convenience, really ran  $38^{\circ} 53'$  north of true west.

The reference point for Mound C was placed to the southeast of the mound, so that all the excavation was made to the north and west of the base lines. The reference point was given an arbitrary elevation of 100 feet, and the mound surface at each stake in the grid, as well as the finds, was related to this elevation with a level. True mean Gulf level of this point was later determined to be 179.23 feet. Finds and features were mapped in terms of the two base lines, i.e., an object was recorded as being North 47.6 feet, West 17.9 feet, elevation 106.5 feet.

Find, feature, and burial numbers were assigned in the same sequence: the sequence in which these items were discovered and exposed. These numbers served as both a field catalogue and a framework for recording. Thus, in the following pages when, for example, Burial 80 is mentioned, it does not imply that 79 burials were discovered prior to number 80.

Mound C was dug with a crew of from seven to 10 men according to standard slicing procedure (Pl. 1). It proved to have been built of loess, a most fortunate circumstance, for loess cuts easily with shovels and tall profiles can be left without danger of their slumping. Five-foot slices started on the north edge of the mound in Trench North 70-75 feet were continued southward until Tomb B was discovered, and uncovered completely by the cutting of the profile at North 45 (Fig. 2). As much of this dirt was pitched down the steep hillside to the north of the mound, there was no difficulty with encroaching back dirt.

While Tomb B was being examined, slicing was begun on the south side with the first trench between North 5 and North 10 feet. This trench was carried northward, slice by slice, until the burned Tomb D was uncovered and the profile along line North 35 feet was exposed. Back dirt

on this side had to be removed by machine. By chance, as a glance at the floor plan of Mound C shows (Fig. 2), the other eight tombs and burial groups lay in the 10-foot-thick remaining section of the structure. This was dug in sections as finds permitted, leaving standing walls 1 foot thick so that profiles might be studied. Profiles were recorded after the completion of each 5-foot slice.

Basket loading showed quite plainly in the central part of the mound, which made it possible to detect the presence of collapsed, log-roofed tombs when the excavation had proceeded to within about 10 feet of each tomb. A telltale sag in the pattern of the basket loads would appear. For example, on profile North 50 (Fig. 3), the sag of the lenses at West 110 feet showed the presence of Tomb E.

### CONSTRUCTION

Burials in Mound C were either in log-roofed tombs at the mound base or arranged in groups higher in the structure. Instead of a description of these features in the order in which they were found, the situation will be clearer if we follow the sequence of construction. A floor plan of Mound C is shown as Fig. 2, and four profiles have been chosen for presentation (Figs. 3-6). These profiles, at North 50, 45, 40, and 25 feet, run through, or very nearly through, all the tombs and burial groups. Thus it is possible to show all of them in elevation. Because tombs and burial groups relate to the building of the mound, they are first mentioned; below, each feature and its contents are described in detail.

There is no evidence that the rounded surface of the hilltop was specially prepared prior to the beginning of the construction of Mound C. Although trees must have been removed, we found no evidence of stump holes or roots. A very complicated network of small tunnels, barely large enough to be cleaned out with the hand, lay between lines North 45 and North 50 feet, extending from West 53 to West 60 feet. These tunnels, lined with niter deposits and partly filled with soft earth, originated on the old ground surface and extended about 2 feet beneath it. At first, this maze was thought to be tree-root molds. However, the lines branched and rejoined in so complex a fashion that it

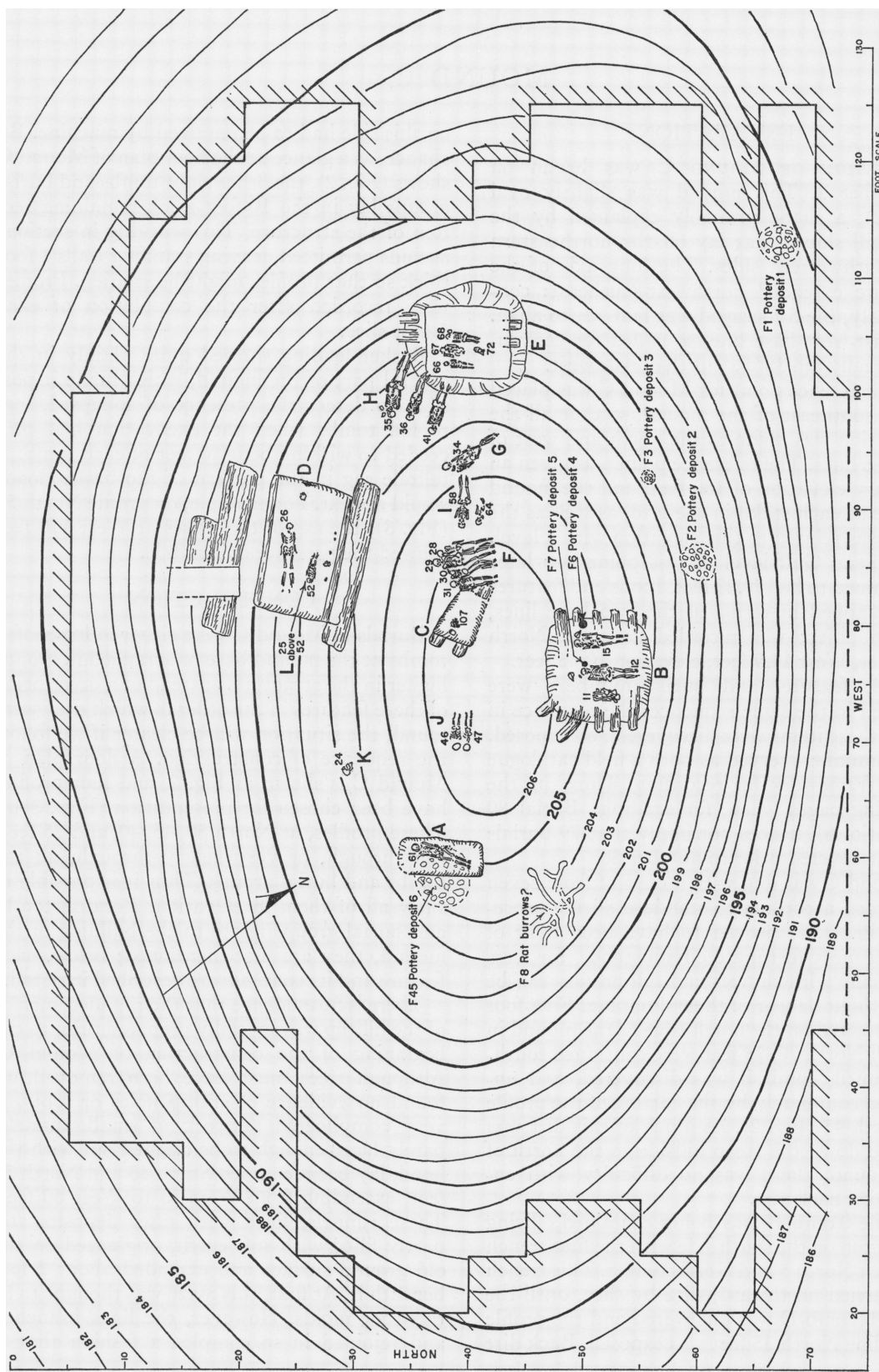


Fig. 2. Map of Mound C. Compare with profiles, Figs. 3-6.

seems more likely that they were rodent burrows, almost certainly of a colony of rats. This suggested the possibility that this area of the hill-top might have been sheltered with a building before the mound was constructed; perhaps the mound replaced a bone house on this commanding spot. However, no additional indications of such a building were found.

Two large tombs, B and D, and one small one, A, were the first structures built at this locality (Fig. 2). Tombs A and B were under the same primary mound. Whether Tomb D is also under this mound is not clear; it could have been a slightly later construction. Tombs A and B were excavated, the burials were deposited in them, and then they were roofed with logs. Tomb A was a small pit to accommodate a single extended burial; the details of the log roof were indeterminable. Tomb B, approximately 10 by 11 feet, was roofed by parallel logs each about 1 foot in diameter. A primary mound that seems to have centered over Tomb B was then constructed. This mound was about 50 feet in diameter and at least 8 to 10 feet high (Fig. 4).

As can be seen in the North 50 profile (Fig. 3), the topsoil was removed from the old ground surface east and west of the edges of the primary mound (east of West 50 feet and west of West 100 feet). This soil probably was used in the construction of the primary mound.

The small Tomb C was constructed in the course of the building of the primary mound. So small that only two logs were needed to roof it, it had its origin about 4 feet above the old ground surface. The roofing logs have a slight slope that may reflect the slope of the mound at this point of construction. Slightly higher in the mound, two skeletons of children, Burial Group I, were laid on the surface and covered. No tomb was prepared. The construction was undisturbed at this stage, until the log roof of Tomb B collapsed. While the tomb was open, niter or saltpeter crystals coated the walls and floor and formed in the casts of the logs as they decayed.

The length of time an earth-covered log roof may have lasted seems to be subject to a number of variables. Among these is the kind of wood, whether the logs were cut full of sap or relatively dry in winter, and whether or not the bark was left on to promote the growth of fungi. In Tomb D, which was burned, the log casts

were clear enough to reveal the fact that oak logs, with the bark still on, had been used in the roof. If Tomb B were roofed with similar logs, decay must have been rapid. Loess is a very porous soil. The redeposition of calcareous nodules on artifacts shows that a considerable amount of moisture was present, but the formation of niter in the tombs suggests that these soils were maintained in a moist but not saturated condition. The collapse of the roof of Tomb B probably occurred in 10 to 15 years.

The collapse of Tomb B caused a sag in the top of the mound rather like the crater of a volcano. This was repaired with a fill of basket loads of gray and brown loess (Fig. 4).

The large rectangular Tomb D, located on the south side of the mound, was excavated into the original ground surface and roofed with large oak logs. Earth was piled over the roof, and the logs were then set afire. It is not clear whether the earth over this tomb was part of the same primary mound that was built over Tomb B.

The deep Tomb E, excavated at the western edge of the primary mound, was roofed with logs about 0.8 foot in diameter. It was covered with a small pile of dirt which must have risen several feet over the lower flank of the primary mound adjacent to the tomb. The relation of this structure to the larger primary mound is best shown in profile North 45 feet (Fig. 4). This roof rotted, in turn, and the logs sagged, forming a basin-shaped depression which was once, at least, filled with water from the rains, to judge from its bottom which was coated with water-sorted soil.

The next step in the mound construction was to lay Burial Groups H, F, and J on the surface of the primary mound and pile on the final mantle of earth to cover the entire mound. Burial G was incorporated in this mantle 2 feet above the surface of the primary mound. By chance, the feet of the burials in Group H, particularly Burial 41, rested over Tomb E. After this final construction stage, the roof of Tomb E collapsed still farther. This additional subsidence caused the bottom to fall out of the basin-shaped depression described above. It also pulled the lower parts of the legs of Burial 41 downward (Fig. 24). The tibia and fibula of both legs did not descend to lie horizontally, as might be expected had the flesh decayed; the legs bent at the knees, which demonstrates that



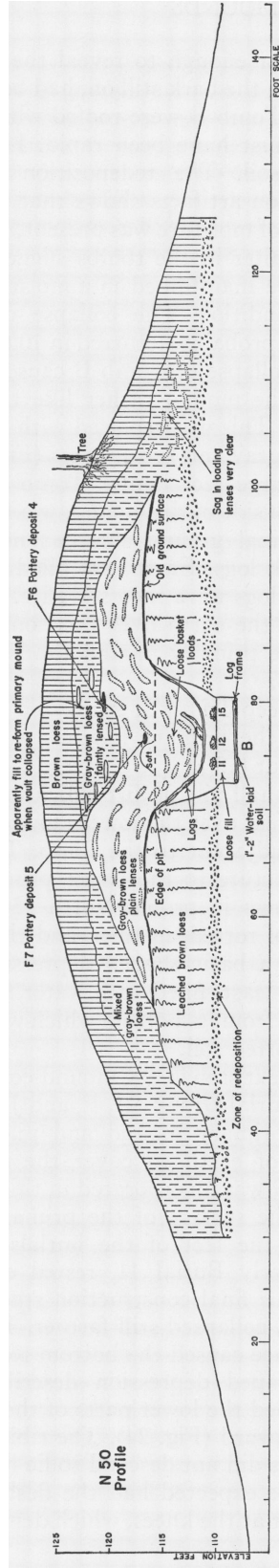


Fig. 3. Profile of Mound C at the North 50-foot grid line, showing a cross-section of Tomb B.

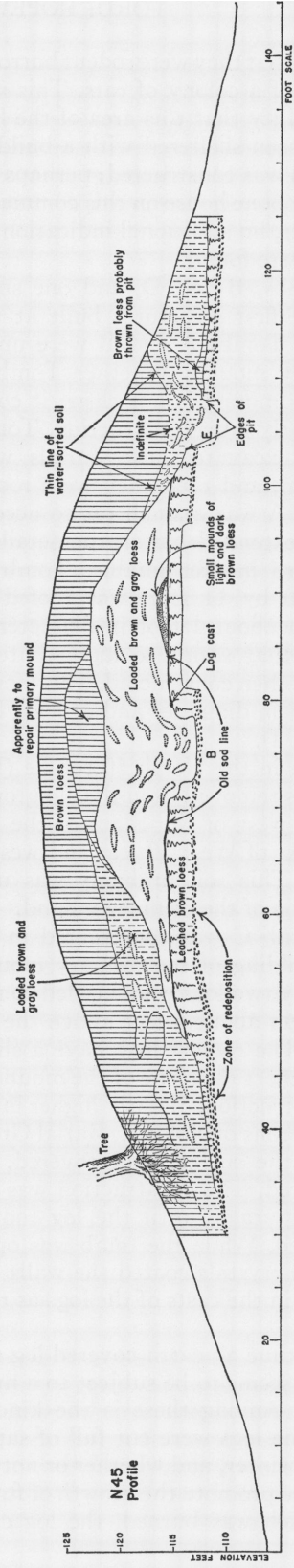


Fig. 4. North 45-foot profile of Mound C. Sag in basket loads of earth caused by collapse of Tombs B and E can be seen.

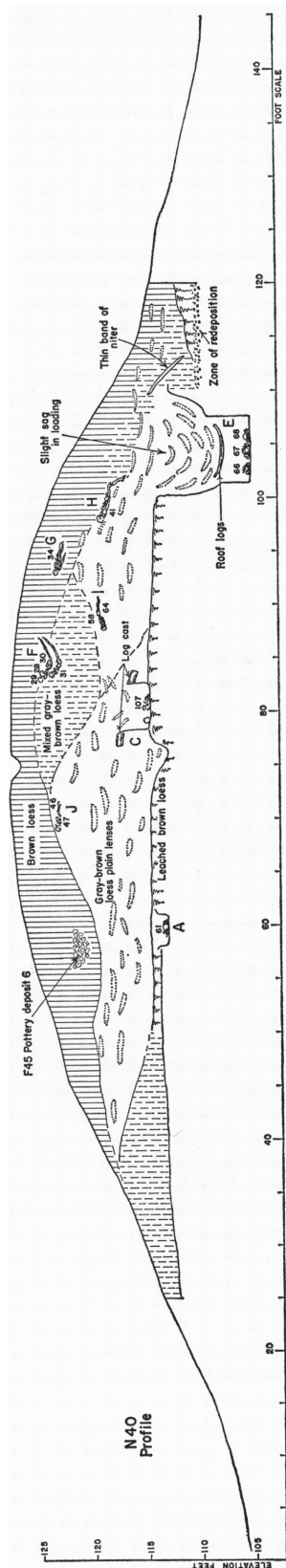


FIG. 5. North 40-foot profile of Mound C, showing relative positions of Tombs A, C, and E, and of Burial Groups J, F, I, G, and H.

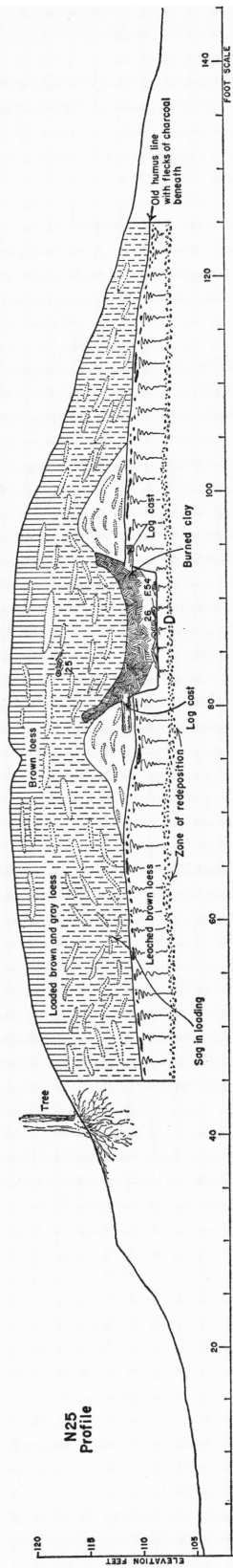


FIG. 6. North 25-foot profile of Mound C. This cuts through the burned Tomb D.

the bones were still attached by ligaments (Pl. 6). After the bones had assumed this position, a slight further separation was caused probably by settling that occurred after the flesh had decayed.

Burial Group F was also involved in the collapse of the small Tomb C beneath it. The sinking of the central parts of the three extended burials left them in such positions as to appear as if they had been placed in a basin (Fig. 22; Pl. 5). Since no disarrangement of the bones was observable, this collapse also must have occurred while the ligaments were still present.

The exact sequence of events in the addition of the final cap has been obscured by the formation of a soil profile. The calcareous content, which gives loess its distinctive texture and color, has leached out of most of this cap. Individual basket loads cannot be distinguished, and the soil is a homogeneous brown loam, as is described above.

The sequence of events in the building of this mound provides a basis for our making a guess as to the length of time construction was in progress. Tomb B was constructed, covered by the primary mound, and collapsed before Tomb E was built. At the time the latter began to collapse the final mantle of earth was added. If the log roofs of each tomb stood for 10 years, a span of 20 years is represented, but is not necessarily the total span of time. The possibility exists that an interval elapsed between the repair of the primary mound and the excavation of Tomb E. It is true that there is no evidence of fans of water-sorted soil around the edges of the primary mound such as might be expected as the result of long exposure to rains. This primary mound was exposed at least long enough to allow time for the collapse of Tomb B to occur. The absence of water-sorted soil is probably due to one of the prominent features of loess; the soil grains are all very nearly the same size. Therefore sorting such as occurs with mixed loam and clays is impossible.

## DESCRIPTION OF TOMBS AND BURIAL GROUPS

### LOG-ROOFED TOMBS AT MOUND BASE

#### TOMB A

When the North 30–35 trench was being dug, a 3-foot sag in the basket loading was noted

between West 55 and West 65 feet (Fig. 2). This proved to be collapse over Tomb A, a rectangular pit 3 by 6.4 feet, which was sunk 2 feet beneath the old ground surface. This small size and shallow depth seem insufficient to account for the sag in the basket loading above it. No information was obtained concerning the details of roofing of this tomb. Some log dust on the floor that extended under the burial may be the remains of flooring material.

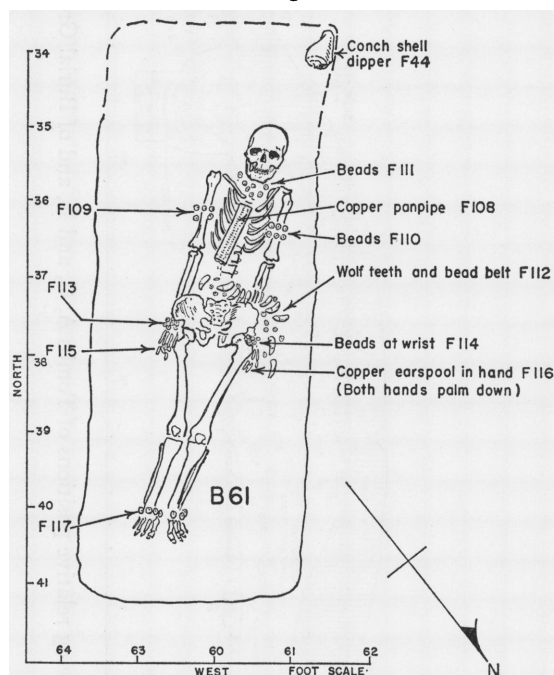


FIG. 7. Tomb A in Mound C. Beads were at neck, upper parts of arms, wrists, and ankles. A bead and wolf-tooth belt was about the waist, and copper-jacketed panpipes lay on the chest.

The single burial (Burial 61) was a young adolescent. The skeleton lay, extended on the back, at an angle to the side walls of the pit, head to the southwest, arms at the sides (Fig. 7). A dipper 20 cm. long, made of *Busycon* shell (Find 44), had been removed from the corner of Tomb A several weeks before, when Trench North 30–35 feet was cut. At that time we were not aware that the trench had cut off the southwestern end of this structure.

Burial 61 was well supplied with beads. Around the neck was a string of 45 or more<sup>1</sup>

<sup>1</sup> It can always be assumed that some of these fragile beads were not recovered or crumbled while being cleaned. Quantities of beads indicate minimum numbers.

fresh-water pearl beads (Find 111). Around the right and left upper parts of the arms were beaded armlets about 7 cm. wide. The beads were arranged in parallel rows of this length, with their long axes and perforations at right angles to the shafts of the bones (Fig. 8). It is uncertain whether or not these small oval beads were sewed to a cloth or leather band, though they probably were. Except for two or three perforated pearls in each set, all the armlet beads are of shell. Similar bands, 7 cm. wide, were around each wrist; each consisted of a

sufficient number of beads to make a single strand about 30 inches long. A larger proportion of these wristlets are of river pearls, approximately 7 inches of beads on each wrist.

Burial 61 also had shell beads at the ankles. These are larger than the shell beads of the wristlets, barrel-shaped, and 1.5 to 2 cm. long. As the ankles were close together, the beads were intermingled and therefore carry the same field catalogue number. There are beads enough to make a string 20 inches long, sufficient to pass around each ankle.

Around the waist were the remains of a belt made of the lower canine teeth (Fig. 9b-c) of the red wolf (*Canis niger*) and medium-sized, doughnut-shaped shell beads. A part of this belt extended down the left side of the burial for a distance of about 12 inches. Two conical holes were drilled on the inner side of each of the 15 wolf teeth. These perforations penetrated to the small nerve canal that runs the length of the tooth root and provided a means by which the teeth were attached to the foundation material

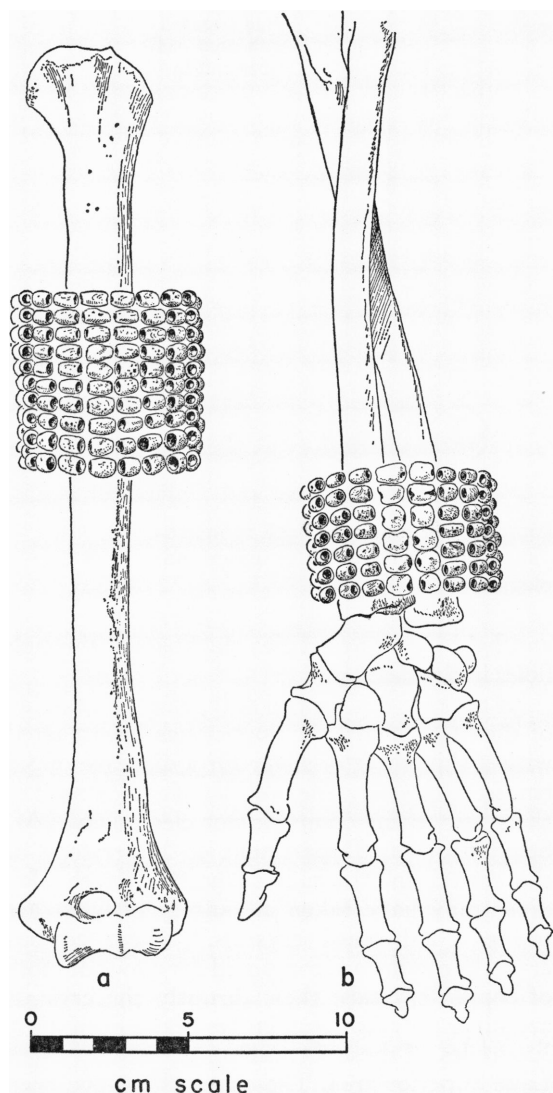


FIG. 8. Arrangement of beads around upper part of arm and at wrist of Burial 61, Tomb A, Mound C.

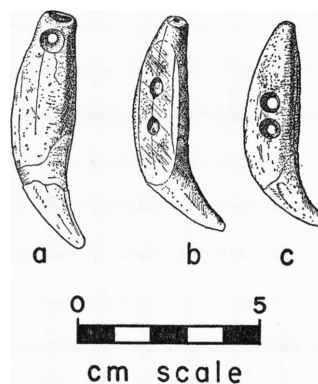


FIG. 9. Animal teeth used as ornaments. a. One of a pair of red wolf canine teeth found at right shoulder of Burial 34, Burial Group G. b-c. Canine teeth of the red wolf were used to decorate a belt about the waist of the burial in Tomb A, Mound C. (See Fig. 7.)

of the belt. These canines all come from the lower jaw and can be matched in pairs according to size, shape, and wear. Eight animals are represented, with one tooth missing. On one pair of teeth the inner faces of the roots were flattened, and the perforations were drilled in from these faces (Fig. 9b).

The wolf teeth were not paired but were

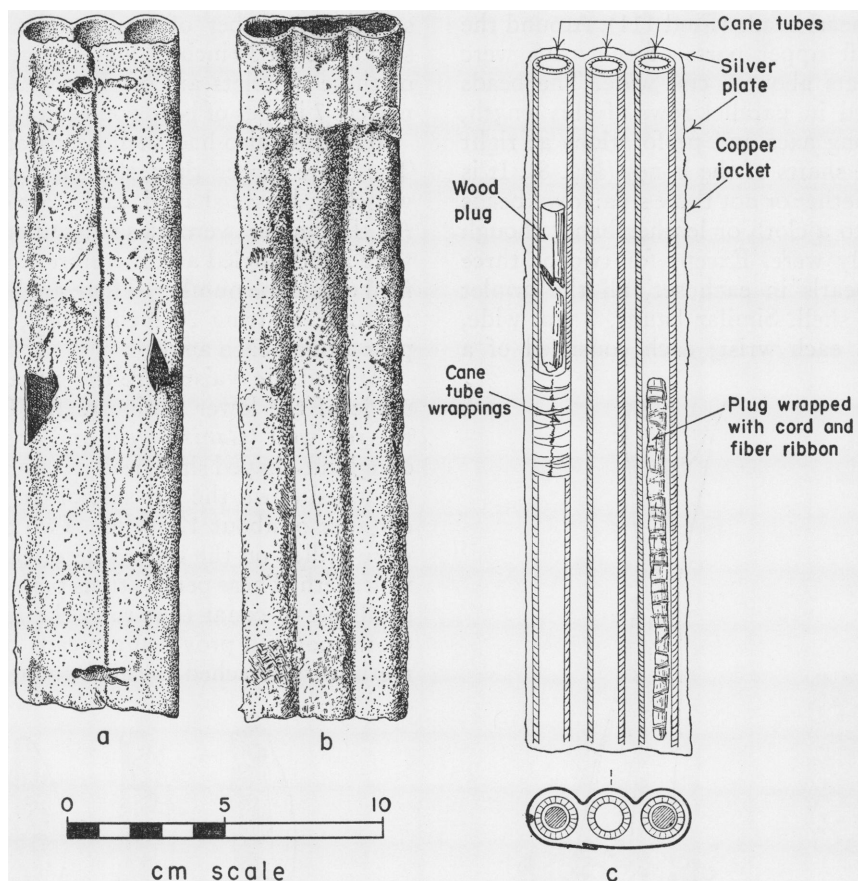


FIG. 10. Copper-jacketed panpipes from Tomb A, Mound C. a. Back of instrument; note tie marks. b. Front of panpipes, showing silver plating at upper end. c. Cut-away view, showing cane tubes and plugs.

spaced singly along the belt. They had been fastened to the foundation material of the belt so that the points of the teeth were toward the feet. Shell beads were interspersed with the canines. Evidently the belt had not been profusely beaded, for only a sufficient number of beads were recovered to make a string 16 inches long.

A set of copper-jacketed panpipes (Find 108; Fig. 10) lay on the sternum of Burial 61. The copper jacket was badly corroded and quite fragile. It is 20.7 cm. long and 5.5 cm. wide and was made to hold three cane tubes approximately 1.3 cm. in diameter, side by side. On the side that may be referred to as the front of the instrument, the copper was bent into flutings to conform to the curves of the three cane tubes. The jacket is flat on the reverse where the edges of the copper sheet were brought together

and held by two cord ties that passed through holes in the sheet.

At the mouthpiece end only, on the front side of the instrument, the copper has been coated with a thin sheet of silver for a distance of 3.2 cm. from the end. The method of attachment of the silver to the copper is not clear. David M. Seaman of the Department of Mineralogy of the American Museum suggests that the Indians may have taken advantage of what are termed "half-breed crystals." These curious crystal growths are composed for a foot or more of copper crystals, then abruptly the crystals are silver for additional inches of the formation. Examples of these formations are found in the Lake Superior area. The cane tubes have been preserved by copper oxide. They run the full length of the copper jacket and apparently did not extend beyond. When the instrument is



viewed as shown in Fig. 10b, the three tubes can be described as left, center, and right. The left-hand cane tube was wrapped for part of its length near the center with twisted bast-fiber string. Two layers of vegetable material, possibly the inner bark of a tree, had been wound over this in strips 3 mm. wide. This wrapping perhaps helped to secure the cane tube in the copper covering.

Usually in the making of panpipes of cane or bamboo, the septum that closes the tube at each joint is utilized to control the length of the tube, but such is not the case with this instrument. The three cane tubes run the full length of the copper jacket, and no joints are visible. The right-hand tube has been plugged with a small stick for 11.5 cm. of its length, leaving an open tube 9.2 cm. long. The plug is a small twig of a variety of wood that has a pith center. It is about 3 mm. in diameter, wrapped with a two-ply yarn which, in turn, is covered with a wrapping of ribbon-like strips about 3 mm. wide, probably the inner bark of some tree. (The string wrappings used in these panpipes are described by Junius Bird as "Two-ply yarn with Z spinning twist and S doubling twist." The string is made of a bast fiber that cannot be identified with certainty.)

No plug is visible in the central tube. A wooden plug in the left-hand tube extends to within 4.5 cm. of the end of the tube. Evidently this was the high-note side of the panpipe.

Adhering to the upper side of the instrument,

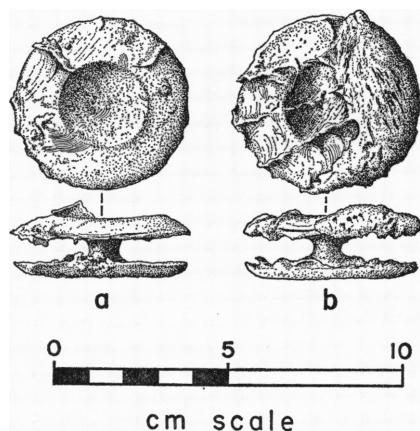


FIG. 11. Copper earspools, Tomb A, Mound C. One of these spools was held in each hand of Burial 61. Note marks of fingers on b. The string wound around the axes is not shown.

as it lay on the chest of Burial 61, are fragments of bast-fiber-twined cloth preserved by the copper salts.

The arms of Burial 61 were extended straight downward at the sides of the body, and the hands were arranged with palms down. The bones of the fingers of each hand were closed around a bi-cymbal copper earspool (Finds 115, 116; Fig. 11). Each spool was 4.5 cm. in diameter and about 2 cm. wide. The cymbal-shaped discs of each spool were attached to each other by sheet copper rolled into a rod 6 mm. in diameter. The exact method by which these rods were fastened to the discs is not clear. Two-ply yarn, similar to that described above, was then wound on the central rod of each spool until it had a diameter of almost 2 cm. Presumably, this was padding for the flesh of the ear lobe.<sup>1</sup>

#### TOMB B

Tomb B was the second largest of the five tombs in Mound C. To build it, a rectangular pit, 8 by 8.5 feet, was dug to a depth of 6 feet into the original surface of the hill (Fig. 12). Then a further excavation was made in the flat floor of this rectangular pit, which formed a pit 5 feet wide, with rounded ends that extended 2 feet farther into the subsoil. This second pit was left open long enough for a 2-inch-thick layer of water-deposited soil to form on the bottom. Then a wooden frame made of seven poles was placed on the floor of the pit (Fig. 13a; Pl. 3). Only the impressions of the poles remained. However, it could be determined that the four long poles and the end pieces were about 3 inches in diameter; the transverse pole toward the northwestern end was slightly smaller.

Similar pits in the floors of tombs are known from Hopewell burial mounds in Illinois, but these contained burials.<sup>2</sup> Two human phalanges found in the fill of this subfloor pit were apparently accidental inclusions. The pole frame lying on the floor was not a roof structure; the earth fill that had been placed above it showed no evidence of collapse. The frame fits in the pit

<sup>1</sup> One of my friends has suggested that perhaps these common Hopewell artifacts are not earspools at all, but yo-yos. Finding these two in the hands should be a convincing support for this theory.

<sup>2</sup> For example, Wilson Mound 6 in the Wabash River Valley in southeastern Illinois. Neumann and Fowler, 1952, 191-207, Pl. 53.

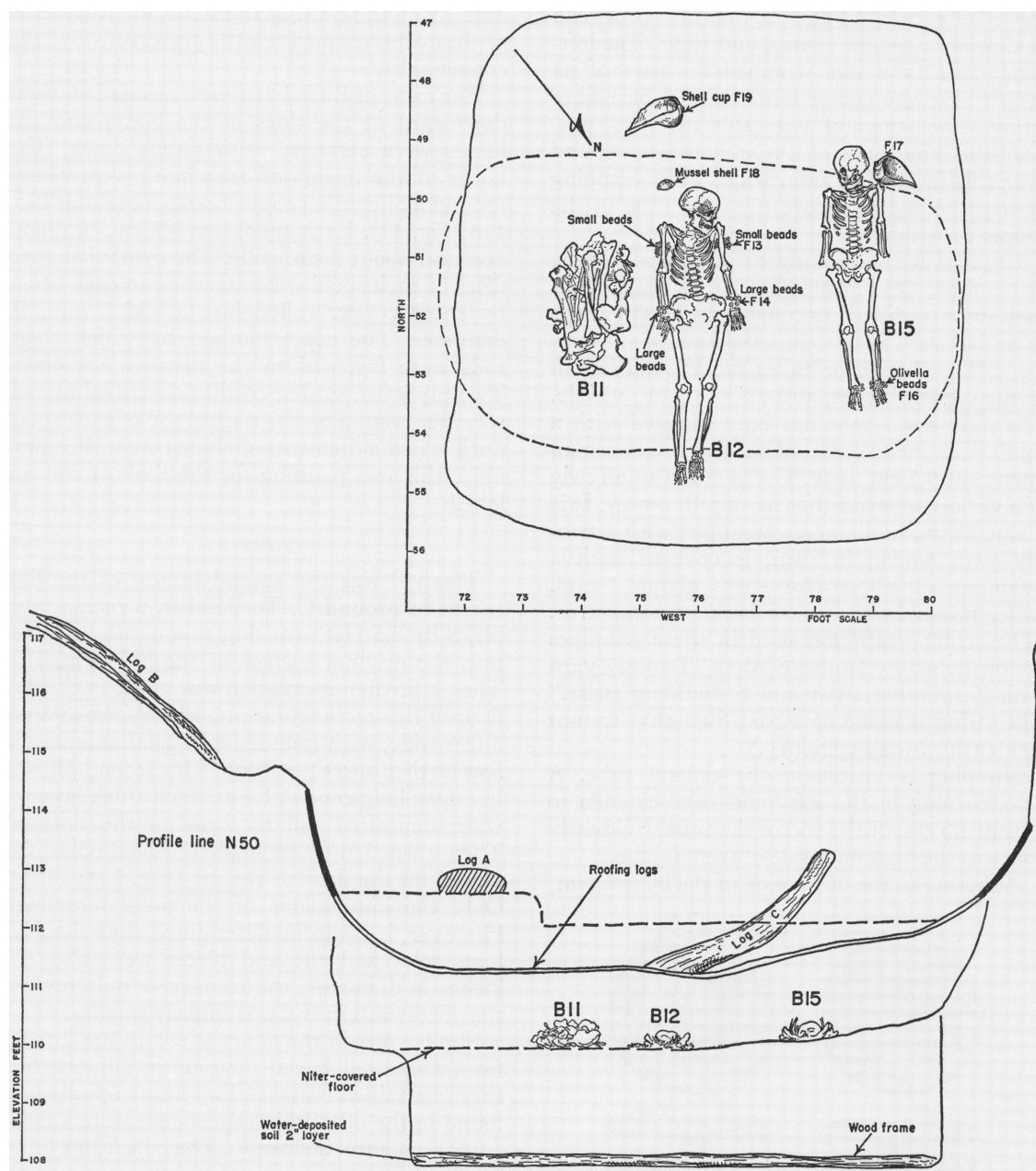


FIG. 12. Floor plan and elevation of Tomb B, Mound C.

exactly. This fact offers two possibilities: either the frame was a litter or similar device and the hole was made to bury it beneath the floor of the tomb, or, more probably, the poles were placed in the bottom of the pit to hold down matting or similar material that has since decayed.

The subfloor pit was refilled with soil so that the floor of the tomb was level, and three

burials were made in it (Fig. 12; Pl. 2). Toward the southeastern wall lay a bundle burial of an adult male (Burial 11). The skull was missing from this package of bones, and there were no accompanying artifacts.

Burial 12 was the skeleton of an adolescent extended on the back, head to southwest, with arms at the sides. Fifteen inches above the head

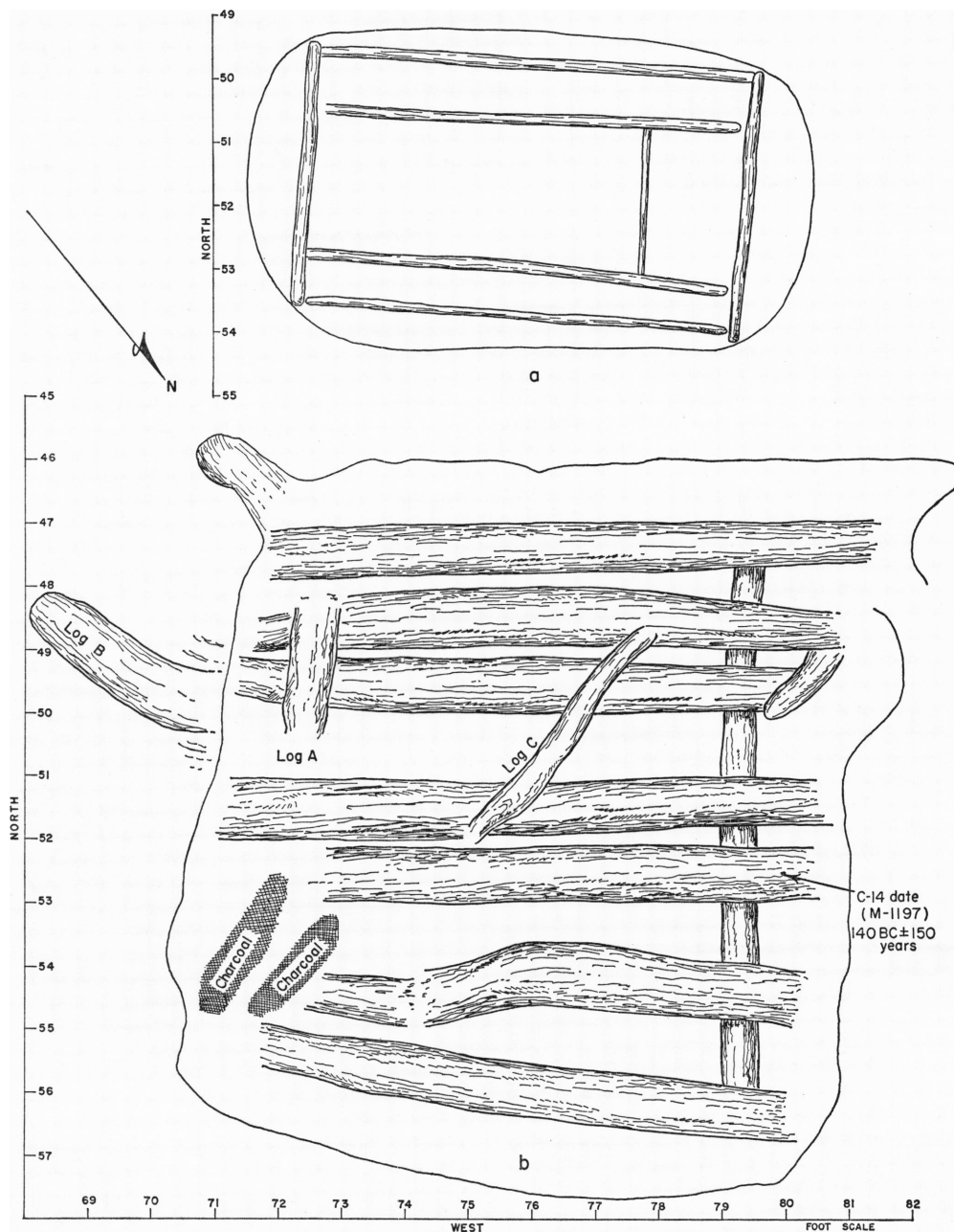


FIG. 13. a. Wooden frame that lay in the oval pit beneath the floor of Tomb B, Mound C. b. Roofing timbers of Tomb B, Mound C.

was a drinking cup made of *Busycon* shell. Near the skull lay half of a fresh-water mussel shell. This had not been modified, but undoubtedly was intentionally placed and probably served as a spoon. Each armlet on the upper arms of Burial 12 was made of perhaps 50 tiny beads, 3

mm. in diameter. The beads were made by a careful grinding of the ends off small, eggshell-like globes 2.5 mm. in diameter (Find 13; Fig. 14i). Obviously these are natural objects, but, although they have been submitted to a number of specialists in various fields, identification has

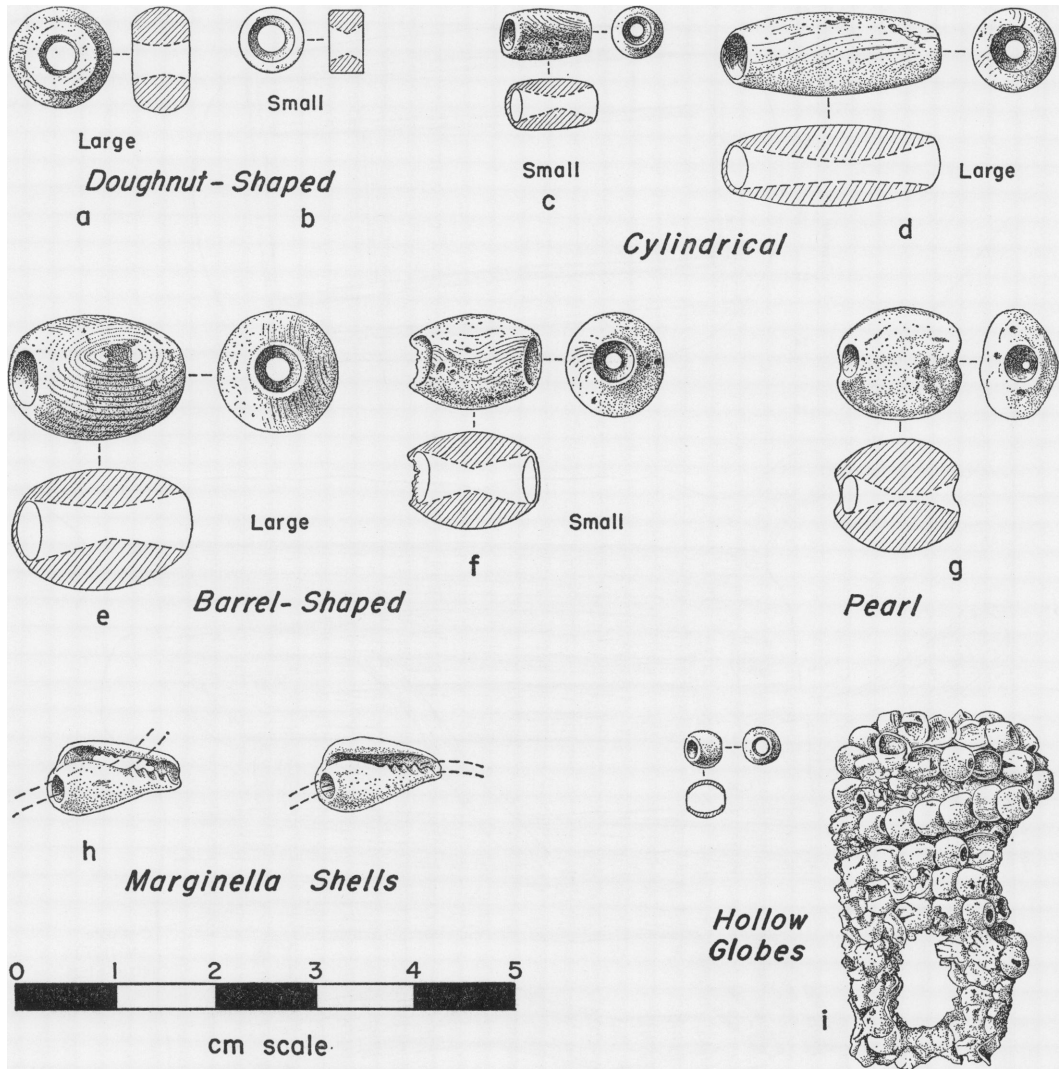


FIG. 14. Types of beads found at the Helena Crossing Site. Bead forms a-f are made of marine conch shell.

not been possible. These beads were arranged in rows side by side and had probably been sewed to a fabric or skin band.

At each wrist there were about 35 small, doughnut-shaped beads approximately 7 mm. in diameter. These had been cut from the side walls of conch shells. Mixed with them were half as many small tubular beads, made from conch columella, approximately 1 cm. long. Both varieties of beads have biconical perforations, i.e., they were drilled from both ends.

Burial 15, a child about 10 years old, lay beside Burial 14, extended on the back in a

similar fashion. A second drinking cup above the left shoulder was made of the shell of the conch *Cassia madagascarensis*. About two dozen beads made of *Marginella* shells lay at the ankles. These had been pierced, as shown in Fig. 14h. A small amount of red ocher lay with these beads.

The roof timbers of Tomb B supported the earth long enough for a layer of white, powdery niter to form on walls and floor covering. This deposit also formed in the casts of the roofing logs as they decayed and flattened under the weight of the earth. The roof of Tomb B had

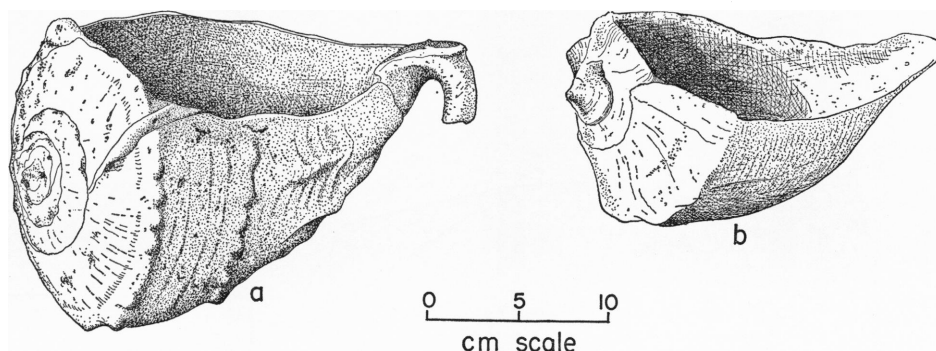


FIG. 15. Conch shell drinking cups.

been constructed of logs, 6 to 8 inches in diameter, placed side by side in a northwest-southeast direction. A small transverse log passed under the northwestern end of these beams to give additional support (Fig. 13b). So long as the roofing logs were intact, the tomb had an open space between 6 and 7 feet high. As described above, a small mound 50 feet in diameter and about 10 feet high was built over this tomb. The basket loads in this mound showed plainly. When the roofing timbers began to sag, some earth fell between the logs so that the timbers finally came to rest about 15 inches above the floor. By the time this occurred the earth below and above the beams had become firmly set, so that it was broken into large clods with open cracks between them. Niter deposits had also formed in these, and

there was some water-deposited soil. Collapse of the roof caused a part of the tomb wall to break down in the western corner; the skulls and other bones of the burials were undoubtedly broken at the same time.

#### TOMB C

The small Tomb C was made about 7 feet west of Tomb B (Fig. 2). Obviously it is slightly later than Tomb B, for it was constructed while the primary mound was being built over Tomb B. The pit for this tomb originates about 2.5 feet up in the primary mound, and its floor was on the original ground surface (Figs. 5, 16).

Excavation of this small tomb was marred by the fact that in the North 40-45 trench we sliced through one end of a roofing-log cast and the corner of the pit before we were aware of it.

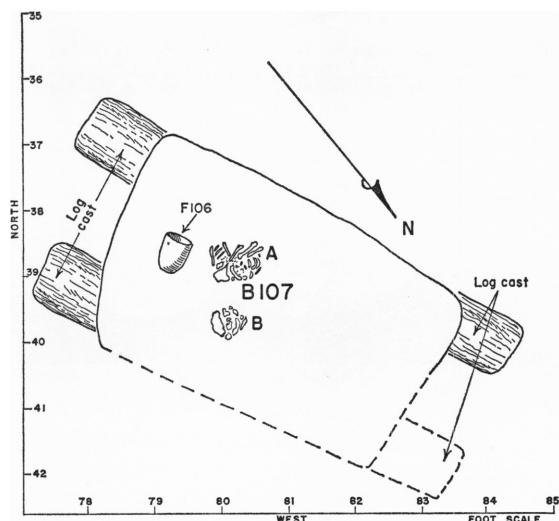


FIG. 16. Tomb C, Mound C. Part of this small tomb was cut away before it was discovered.

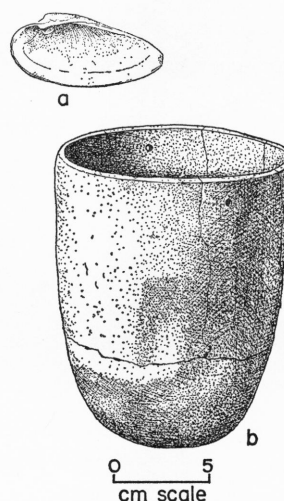


FIG. 17. Undecorated vessel and mussel-shell spoon from Burial 107, Tomb C, Mound C.

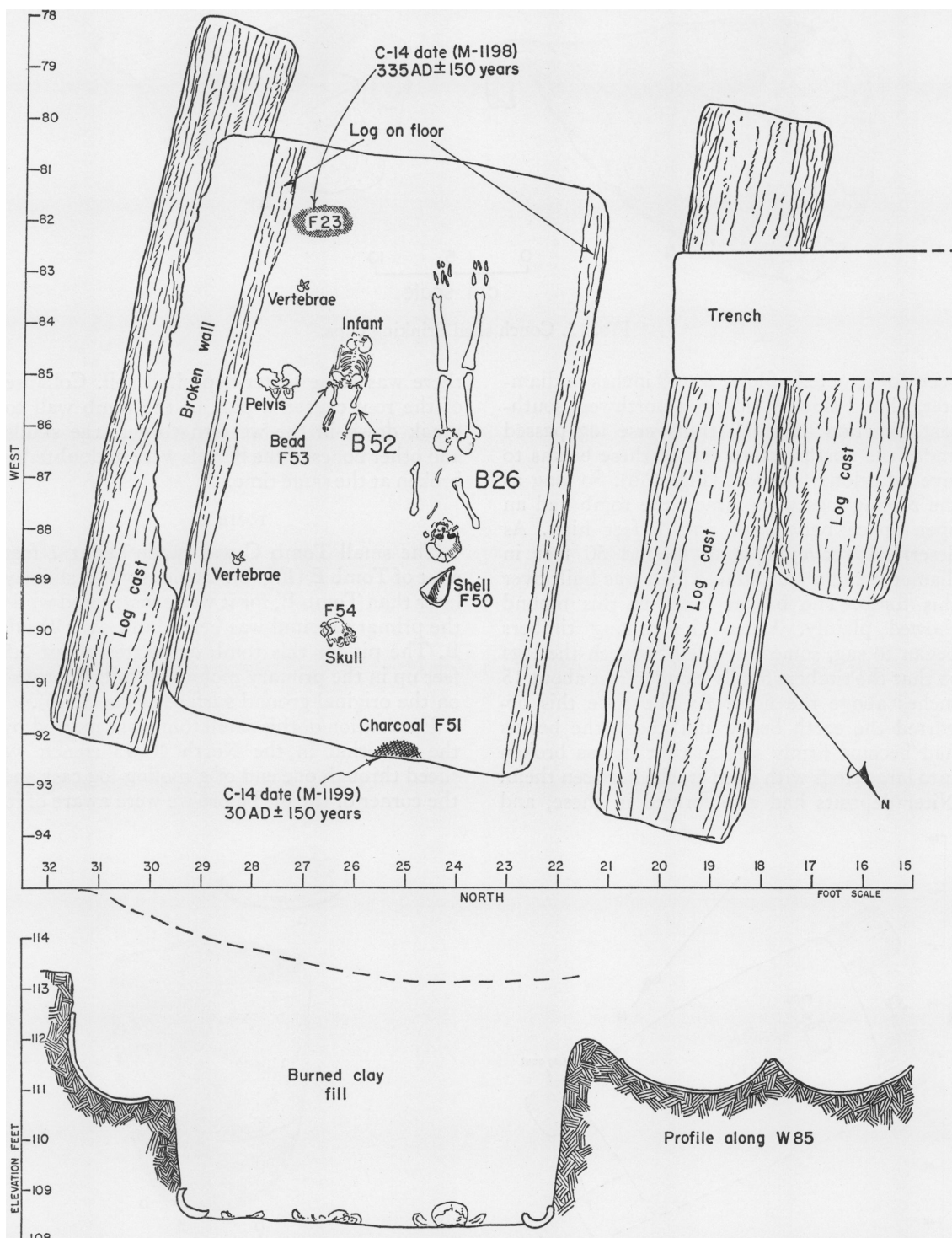


FIG. 18. Floor plan and profile of Tomb D, Mound C. This tomb was burned after it had been provided with an earth covering.



Apparently the pit was rectangular, 5 feet long north to south and 3 feet wide. The disarticulated bones of an infant were placed on the floor (Burial 107); near it an undecorated pottery vessel lay on its side (Find 106). It had two drilled suspension holes near the rim, and inside it was half of a mussel shell, probably a spoon (Fig. 17a).

The walls and floor of Tomb C were coated with niter; the pit was filled with the loose clods of earth that result from roof collapse. It was not possible to trace the roofing logs through the pit, but at the ends it could be plainly seen that the roof had been made of two logs that ran lengthwise, approximately 1.25 feet in diameter and 7 feet long. The logs sloped slightly toward the west, perhaps reflecting the slope of the mound.

#### TOMB D

The largest tomb in Mound C had been burned. To build Tomb D the Indians had excavated a rectangular pit, 11.2 feet southeast to northwest and 7.3 wide, to a depth of 3 feet beneath the original ground surface. The marks of the digging sticks showed plainly on the pit walls. Along the North 25 profile it could be

seen that the earth taken from this pit was placed in piles at the northwestern and southeastern ends of the pit (Fig. 6). However, it was not possible to trace the exact outlines of these piles. Apparently this dirt was piled between the ends of the large logs, 3 to 4 feet in diameter, that were placed on the old ground surface along the edges of the pit on the southwestern and northeastern sides. The sketch (Fig. 19) illustrates the probable appearance of the tomb before it was roofed. Small logs, 0.6 foot in diameter, placed on the floor of the pit, running lengthwise along the southwestern and northeastern walls, may have served to hold a mat lining in place, but no evidence of such a lining was found.

The contents of Tomb B were thoroughly charred and rather fragmentary. Burial 26 was an adult extended on the back with head to the northwest (Fig. 18). Above the skull was the charred fragment of a conch shell cup, apparently *Busycon*. Parallel to the adult, but with the head lying in the opposite direction, was the extended skeleton of a young child (Burial 52). Very small fragments of these delicate bones remained. At the right wrist was a single pearl bead, also well burned. A pelvis and a few

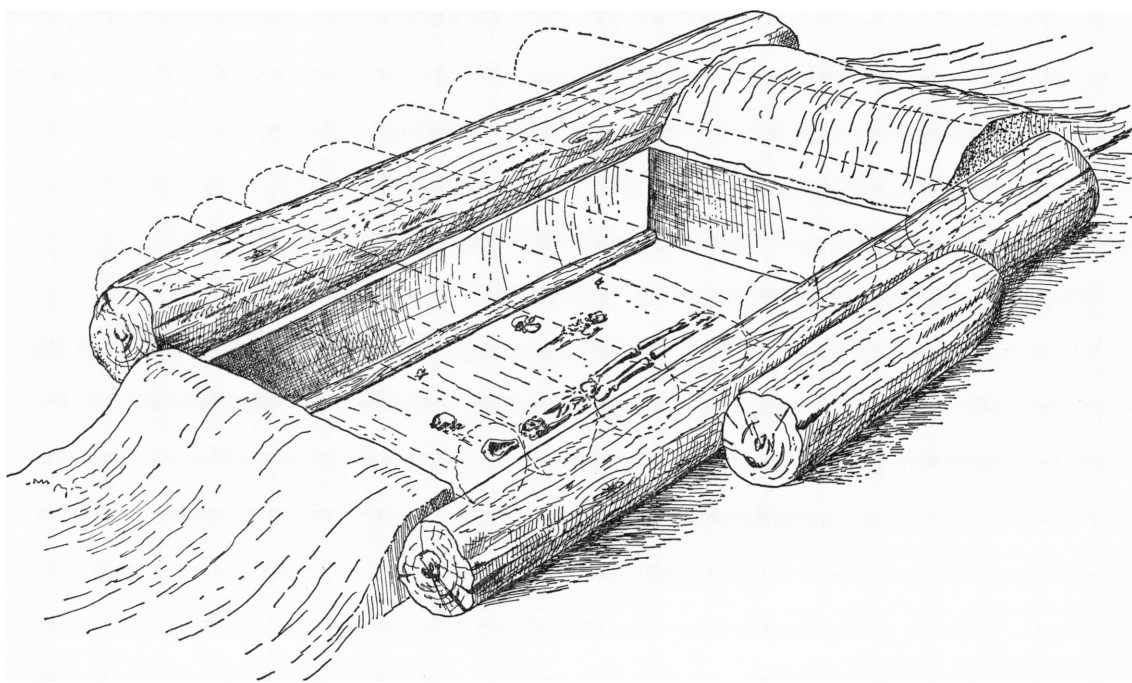


FIG. 19. Reconstruction of Tomb D, Mound C, showing probable arrangement of roofing timbers.



fragments of vertebrae were scattered along the northeastern wall of the pit, and near the northwestern wall were fragments of a skull (Burial 54). Against this wall was a large fragment of charcoal, evidently the remains of a roofing timber. This was preserved for radiocarbon testing as Find 51.

There is no direct evidence concerning the arrangement of the roofing timbers in Tomb D. These timbers must have been large to have produced the intense heat that existed during the burning of the tomb. Probably the roofing timbers were laid running northeast-southwest, and the ends rested on the large logs that lay along the sides of the pit, as is shown in Fig. 19. The collapse of the latter logs would have destroyed the casts of the roofing timbers.

The fill of Tomb D consisted of a 2-foot-thick mass of fired earth that sagged down from near the tops of the small piles of earth placed at each end of the pit. The inner faces of these earth piles were also thoroughly burned, clear evidence that the roof was at the level of the tops of these piles, leaving about 7 feet of head room in the tomb at the time the fire started. This fill presents the typical signs of collapse: large lumps of brick-like burned earth with large open cracks between them. A layer 0.4 foot thick of ash and small flecks of charcoal lay directly on the floor of the tomb. This layer undoubtedly represented the remains of the roofing timbers that were almost completely consumed. When the 2 or more feet of earth piled over the log roof are considered, it might be expected that more of the wood would have been reduced to charcoal. That such was not the case is probably explained by the red color of the superimposed fired earth; abundant oxygen was present while the logs burned.

A foot of very loose, oxidized, fired clay in large lumps rests over the ash layer. In many of these lumps, the quartz in the clay has vitrified and flowed to form a greenish coating of glass. These were probably surfaces in direct contact with the logs, and here the temperature probably reached over 1000° C., considerably above usual pottery-firing temperatures for these people. Another foot of fired soil, also red, lay over the layer of loose fired soil. This was somewhat more compact, with some silt deposited, apparently by water action, between the lumps.

The walls of Tomb D were fired to a depth of about 0.6 foot and had an expectable gradation

in color. The outer 0.2 to 0.3 foot of wall was brick red and quite hard. Beyond that, where fresh oxygen had not penetrated, the earth became slightly softer, and the color changed to dark gray. However, this transition did not take place in the burned earth of the roof. Above the 2 feet of brick-red earth there were basket loads of soil unaffected by heat and showing no evidence of collapse. Evidently when the tomb was fired its log roof had only a layer of earth about 2 feet thick. After burning was completed, and apparently after some rain had fallen, basket loads of loess were piled into the crater made by the fallen roof.

Several large blocks of earth had broken loose from the southeastern wall and, while maintaining their upright position, had slid downward onto the floor of the tomb, doubtless as the roof was caving in.

As is stated above, it is difficult to determine the exact temporal relation of this structure to the other tombs at the mound base. It certainly was built before any substantial portion of the mound was erected and may be coeval with Tombs A and B.

#### TOMB E

The deepest of the log-roofed structures at the base of Mound C was built northwest of the center. This was a rectangular pit, 6.5 feet southeast-northwest and 8 feet in opposite directions, that was cut 7.5 feet beneath the old ground surface (Figs. 5, 20). In the preceding discussion it is asserted that the earth over this pit was added after the building of the small primary mound over Tomb B. However, the time involved probably was very short, for the identity of orientation suggests that the two excavations were made by the same Indians.

When we started to clean Tomb B, it appeared to be a basin-shaped excavation with rather indistinct walls. However, when it was half cleaned out, the true walls were discovered. They proved to be vertical and very clearly defined, and marks of the digging sticks showed plainly. It became apparent that blocks of earth had broken off from the upper walls all around the pit and rested on the floor beneath the remnants of the roofing beams. These were found 2 feet above the pit floor. The breaking off of the earth doubtlessly occurred as the vault roof collapsed. The butt ends of several of the roof timbers rested on the slopes near

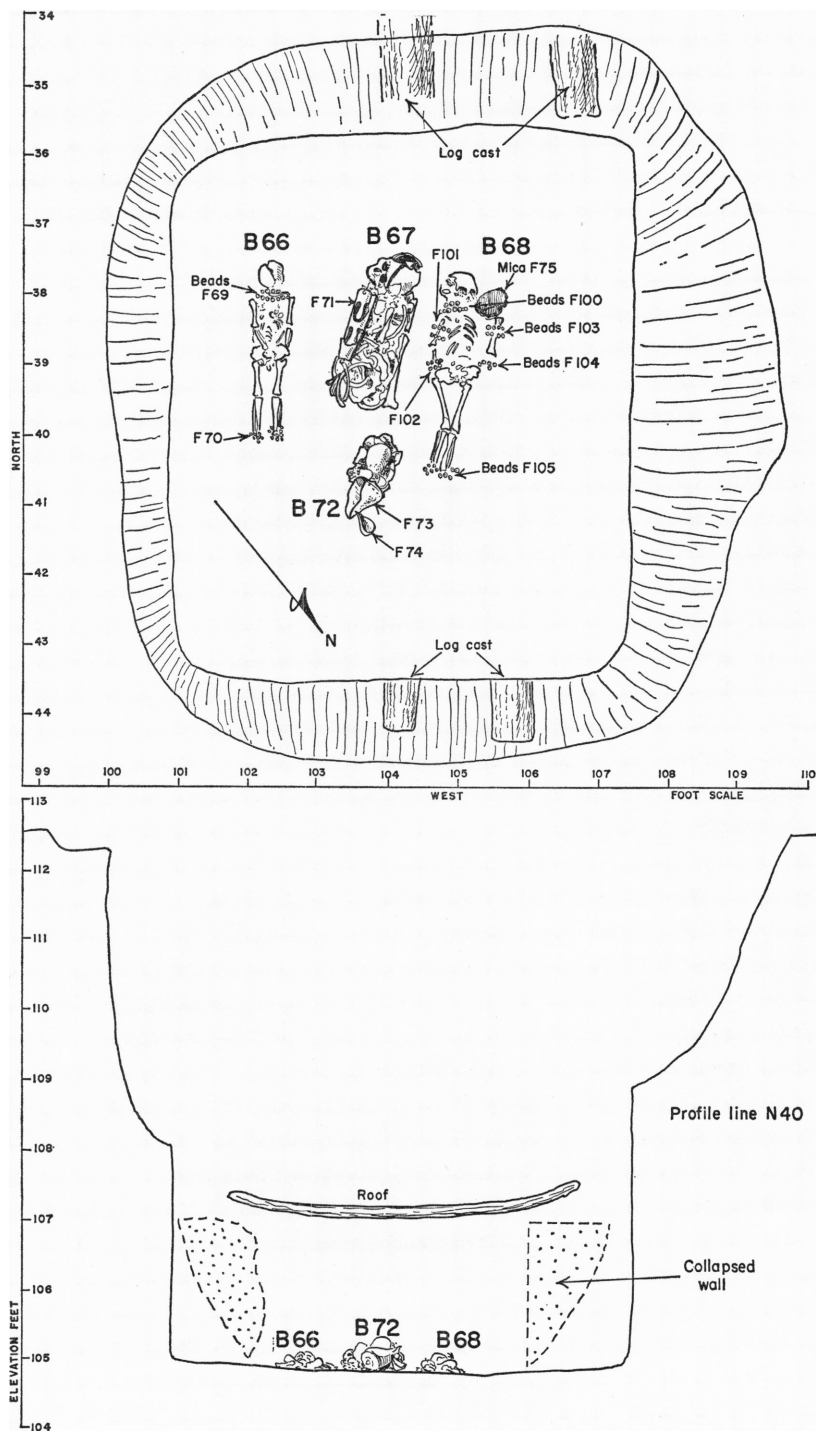


FIG. 20. Floor plan and profile of Tomb E, Mound C.

the top of the pit. These showed that the roof beams were about 0.5 foot in diameter and were laid lengthwise of the tomb.

On the floor of Tomb E were the remains of four individuals placed rather closely together toward the center of the floor (Fig. 20; Pl. 4a). Burial 67, apparently the principal interment, was a tightly rolled bundle of the bones of an

adult, probably female. The long bones, ribs, and other bones were neatly packaged, but some of the vertebrae were in articulated positions. Apparently the cleaning of the bones was not completed. A cylinder of thin sheet copper, 27.5 cm. long and 4 cm. in diameter, lay lengthwise on top of this bundle (Find 71; Fig. 21; Pl. 4b). This apparently is a ferrule for a

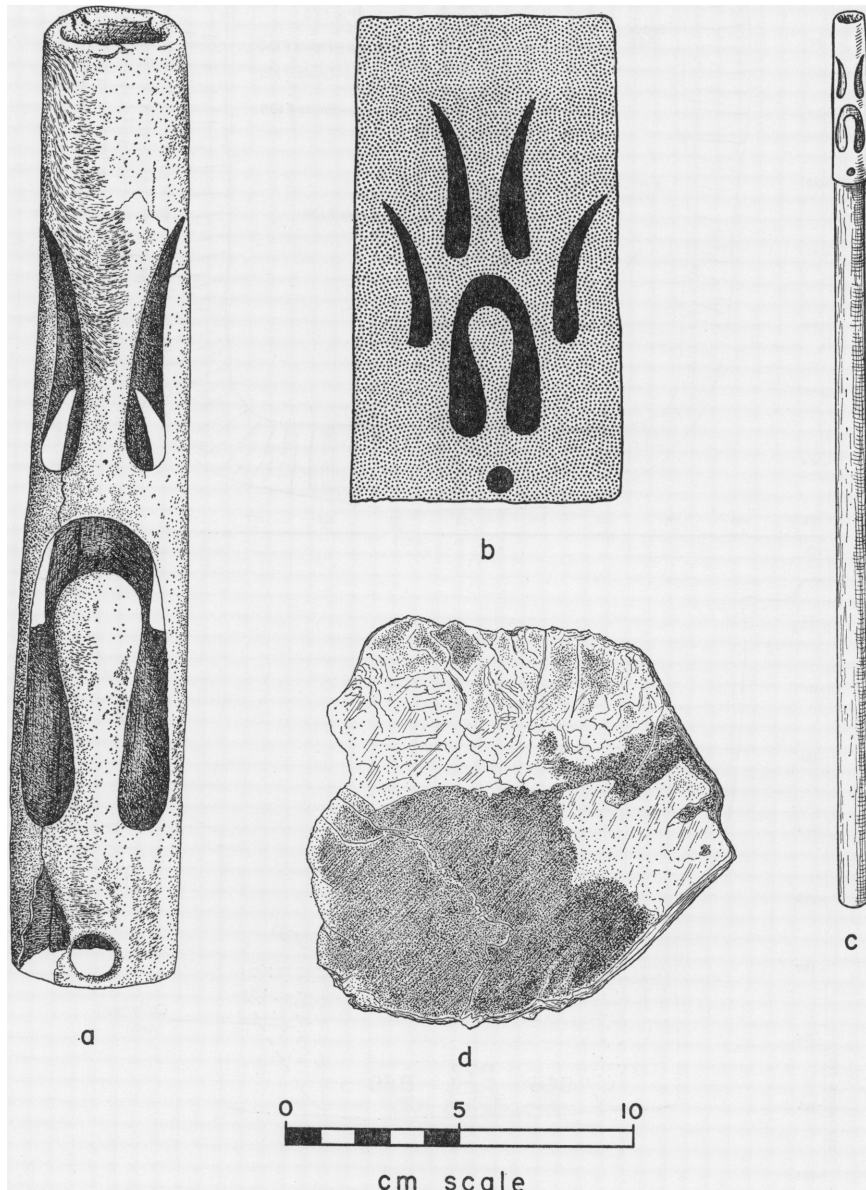


FIG. 21. a. Copper tube, probably a staff ferrule, from Burial 67, Tomb E, Mound C. b. Design on copper tube. c. Probable use of copper tube. d. Piece of sheet mica found with Burial 68, Tomb E, Mound C.

wooden staff. Bits of wood adhered to the metal on the inside. The construction of the tube also suggests such a use, because the metal at one end has been crimped over as though to cover the end of a staff, while at the other end a hole  $\frac{1}{2}$  inch in diameter probably accommodated a pin for securing the metal sleeve. This cylinder was made from a flat sheet of very thin copper, remarkably uniform in thickness, which measured  $5\frac{1}{4}$  by 12 inches. Typical Hopewell cut-out designs were made, as is shown in Fig. 21a. For some reason this copper object is not corroded to the same extent as the earspools and panpipes found in Tomb A. However, the material is so brittle that it cannot be bent into the original shape. The probable use of this object is shown in Fig. 21c. The cut-out design is developed in Fig. 21b.

Fabric impressions are preserved by the copper salts in a small area near the crimped end of this ferrule. Junius B. Bird, who examined these impressions, describes the technique as twined construction. It cannot be determined whether the warps were handled singly or in pairs, but these elements do run parallel and are spaced at the rate of 20 per 2.5 cm. Wefts are spaced six per 2.5 cm. Twining twist is to the right. Both warp and weft are bast fiber. Spinning or doubling twists cannot be determined. Within 2 cm. of the area on the ferrule at which the pattern can be most clearly observed, there seems to be a shift to split pairing. This is not entirely clear, but the faint impressions suggest that the warp fabric was bordered by a free-hanging warp fringe.

A second fabric impression, 8 cm. from the crimped end of the ferrule, shows a bast-fiber fabric which has split-paired warp-spun to the right and doubled in the opposite direction. Twining twist seems to be to the left. Warp pairs are spaced 16 per 2.5 cm. (based on three warp pairs), and weft elements are 11 per 2.5 cm. (based on three rows).

To the southeast of this bundle burial, and lying parallel to it, there was the extended skeleton of an infant (Burial 66). A string, 36 cm. long, of large, barrel-shaped beads, each about 14 mm. long and 11 to 12 mm. in diameter, made from the side walls of large conch shells, lay around the neck (Fig. 14e). These beads were drilled from both ends and have biconical holes. At the ankles were 16 small shells of *Marginella apicina* (Menke), two small

perforated pearls, and about two dozen of the tiny beads made from the unidentified hollow spheres that are described above, from Tomb A (p. 19).

On the other side of the bundle burial was a skeleton of another child extended on its back (Burial 68). Lying against the left shoulder was a sheet of mica about 4 mm. thick (Find 75; Fig. 21d). This has not been cut into a symmetrical form, but measures about 11 cm. across in both directions. The plate of mica serves as a fairly efficient mirror, which probably was its function. Burial 68 was well provided with beads made from the walls of conch shell. At the neck were 166 cm. of small, barrel-shaped beads of the type shown in Fig. 14f. About the right and left upper parts of the arms were small, doughnut-shaped beads of the type shown in Fig. 14b, 45 cm. of beads on each arm. The exact arrangement of these beads was not determined (Finds 101, 103). At the wrists were more of this same type of bead, but evidently only a single string about each (Finds 102, 104). Small, barrel-shaped beads were found at the ankles (Find 105). At this point there were 56 cm. of beads.

Near the northeastern end of the principal bundle burial there was the isolated skull of a male in fragments, evidently broken by the fall of the roof (Burial 72). A drinking cup made of *Busycon* shell 15 cm. long (Find 73) lay against this skull, and in contact with a small cup made of a young *Busycon*, 10 cm. long (Find 74).

#### BURIALS DEPOSITED ON SURFACE OF PRIMARY MOUND

The five log-roofed tombs constructed at the base of Mound C are described above. The burials described below were not placed in prepared tombs. However, they tended to be placed in groups in which the individuals lay parallel to one another exactly as did the skeletons in the tombs. There are five of these burial groups and a single isolated skull burial. All the groups except one (I) seem to have been placed on the surface of the conical primary mound that was built over the subfloor tombs while the log roofs of the lower tombs were still intact.

#### BURIAL GROUP F

This group consisted of four skeletons lying extended on their backs, side by side, with

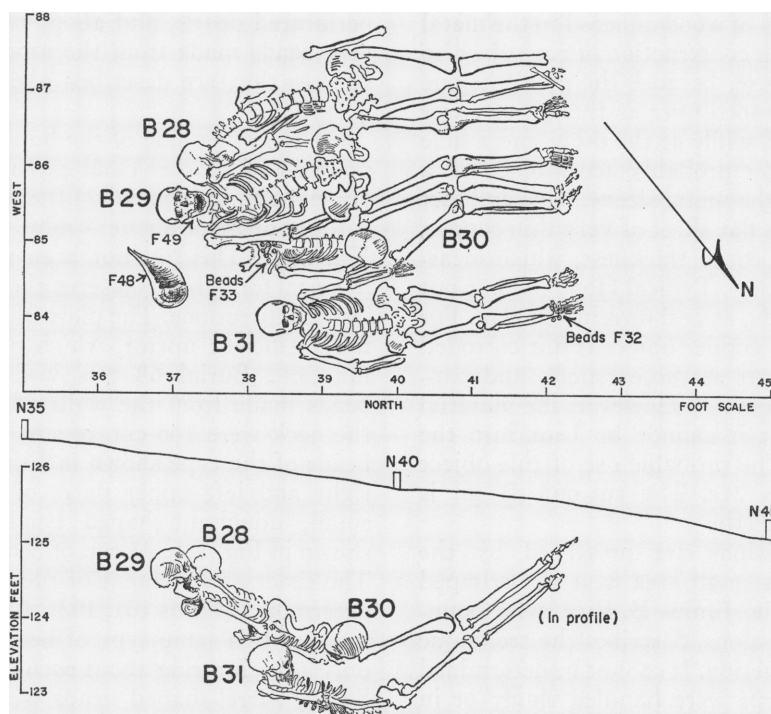


FIG. 22. Plan and elevation of Burial Group F. This group was placed on the surface of the primary building stage of Mound C. Displacement was caused by the collapse of the roof of Tomb C. (See Fig. 5 and Pl. 5.)

heads to the southwest (Fig. 22; Pl. 5). They had been placed on the surface of the primary mound and when found were about 9 feet above its base. By chance, this group was almost directly above the small, log-roofed Tomb C, so that, when its roof collapsed, the pelvic regions of all the skeletons were dropped about 1 foot below the skulls and feet (Pl. 5). This collapse must have occurred before the ligaments holding the bones together had completely disappeared, for little disarticulation was produced by this movement. The skull of one burial (Burial 30) had been detached and lay on the pelvis of the skeleton. Possibly it rolled down through the body cavity at the time of this movement.

The sex and age of the four skeletons in Burial Group F are as follows: Burial 28, mature male; Burial 29, old female; Burial 30, old female; Burial 31, child about 10 years.

Two shell cups made of *Busycon* were with these skeletons. One, 24 cm. long, lay just above the place where the skull of Burial 30 should have been (Find 48). The other was from a

larger shell, but the pointed end had been trimmed off so that the cup is about 17 cm. long (Find 49). This lay beneath the neck of Burial 29. Only two burials had beads. These conformed to the varieties shown in Fig. 14. Two dozen small, barrel-shaped beads cut from a conch shell (Find 33) lay at the neck of Burial 30. Burial 31 also had beads made from conch. A total of 32 cm. of small, doughnut-shaped beads were at the wrists; at the right ankle, 10 large, barrel-shaped, conch-columnella beads.

#### BURIAL GROUP G

This is not truly a "group," for there was only one skeleton, an adult male (Burial 34), which lay extended on the back on the surface of the primary mound (Fig. 23). The head was toward the south, and the skeleton lay on a slant, with the feet lower than the head, presumably reflecting the slope of the primary mound surface. The arms were straight down the sides, the hands under the wings of the pelvis, and the right leg had been crossed over the left. The skull had been displaced and lay on one side.

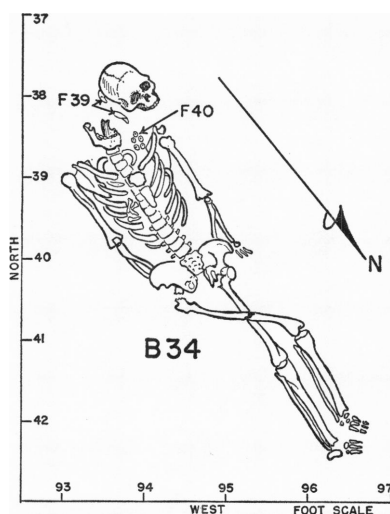


FIG. 23. Burial 34, Burial Group G. This skeleton was placed on the surface of the primary mound and disturbed when the roofs of the tombs below collapsed. Two wolf teeth (F39) lay beside the skull.

The jaw was in proper position in relation to the vertebral column.

Two canine teeth of the red wolf (*Lupus niger*) which have biconical suspension holes drilled at the proximal ends (Find 39) lay under the skull (Fig. 9a). Over the left shoulder there were about 50 *Marginella* beads. These were not drilled through the larger end but had holes in the sides, probably for the purpose of being sewed to fabric or skin.

#### BURIAL GROUP H

Three burials extended on their backs, parallel to one another, were placed on the western slope of the primary mound, with heads up the slope (Fig. 24; Pl. 6). Burials 35 and 31 are both old females, and Burial 41 is a young adult male. The skulls of Burials 35 and 36 were turned to their left, while the skull of Burial 41 turned to the right. As is mentioned above, the lower portions of the legs of two of these skeletons were displaced downward. The lower portions of the legs of Burial 36 were more involved; they were bent downward slightly at the knees, but violent earth movement had broken the tibiae and fibulae near the middle of the shafts, and the distal portions of the bones and the feet were displaced downward for 1 foot. It is the position of the lower parts of the limbs of Burial 41 that most clearly demonstrates that

the collapse of Tomb E occurred while the bones of these skeletons were still connected by ligaments. The lower elements of the legs of this burial were bent almost 90 degrees at the knees.

Two pottery vessels (Finds 37 and 38), which lay on their sides near the left shoulder of Burial 35, were decorated with crude Marksville Stamped designs (Fig. 25). A mussel shell in Find 37 probably served as a spoon.

#### BURIAL GROUP I

The two skeletons that form Burial Group I were lower than the groups just discussed and were deposited within, rather than on the surface of, the primary mound. Both were extended on the back, with heads to the southeast (Fig. 26; Pl. 7). Burial 58, a child of nine to 12 years, lay on the back, arms at the side and hands in the pelvis. From feet to pelvis the bones lay almost on a level, but the upper part of the body was curved downward so that the skull was almost 2 feet below the pelvis. This portion of Burial 58, like Burial 64, obviously was moved when the roof of Tomb F collapsed. The vertebral column was not disarticulated, so there must have been ligaments attaching the bones when this movement occurred. Portions of the lower arm bones were missing. Burial 64, a child, lay beside and parallel to Burial 58. Only the skull, upper thorax, and left humerus were present. These bones were in good condition, so the absence of the other bones cannot be attributed to decay, nor was there an indication of a pit that might have cut away parts of the two skeletons. Rodents may have destroyed these bones, but it seems unlikely.

Near the left shoulder of Burial 58 lay a large drinking cup, 23 cm. long, made of the shell of *Cassia madagascarensis* (Find 62); a few inches away was a spoon very nicely made from a large, fresh-water mussel shell (Find 63; Fig. 27b).

#### BURIAL GROUP J

Burial Group J consisted of the skeletons of two infants placed on the surface of the primary mound, lying extended on the back, with heads to the southeast. No further details can be given, for the two skeletons were removed by school children before they were completely uncovered.

#### BURIAL GROUP K

This "Group" consists of a single skull that

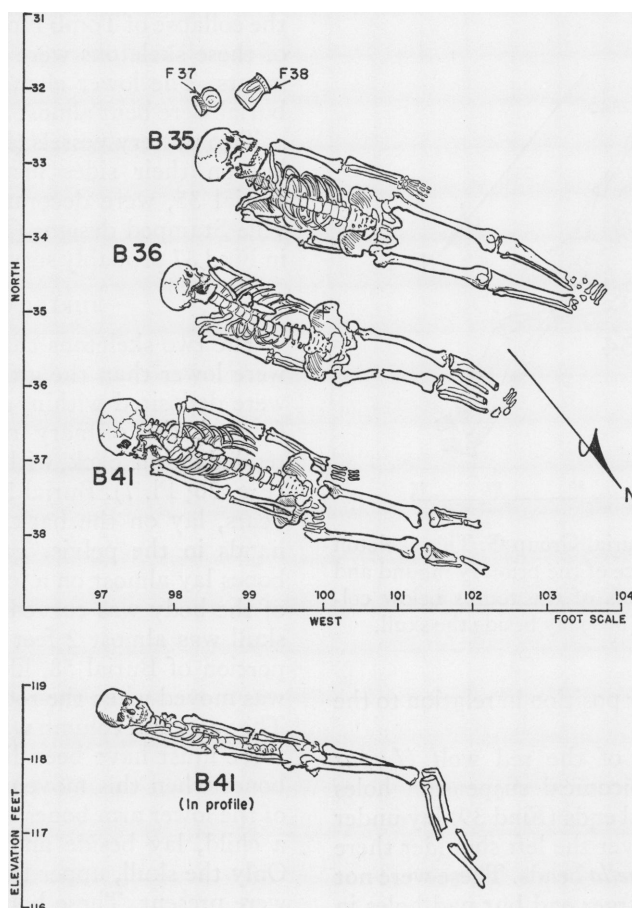


FIG. 24. Plan and elevation of Burial Group H. This group was placed on the surface of the primary stage of mound construction. Collapse of Tomb E below bent the lower legs of Burials 36 and 41. (See Fig. 5 and Pl. 6.)

was placed on the surface of the primary mound on the southern side (Burial 24). The mandible was articulated, but no other bones accompanied the skull. There were no grave goods.

#### BURIAL GROUP L

Another misnomer. This skeleton of an infant, extended on the back, arms at the sides, head to the east, was placed in the mound fill, 4 feet below the present mound surface, above Tomb D (Fig. 28). The fragile bones were in rather poor condition. There were no accompanying offerings.

#### POTTERY DEPOSITS

Only three pottery vessels accompanied the

burials in Mound C. One, an example of Marksville Plain, was in Tomb C; the other two, both Marksville Stamped, accompanied Burial 35 in Group H (Fig. 25). In addition, seven deposits of potsherds were located at various points in the mound fill. None of these was associated with burials, and it is very doubtful if any of these deposits were made as offerings. Rather, they appear to consist of one or more basket loads of sherds, ash, charcoal, and other rubbish that was added to the mound as fill. The source of these sherds is not known. There is no evidence of camp refuse on the ridge on which Mound C is built. In addition to these pottery deposits, a few sherds were found scattered through the fill of the mound. They are described below.



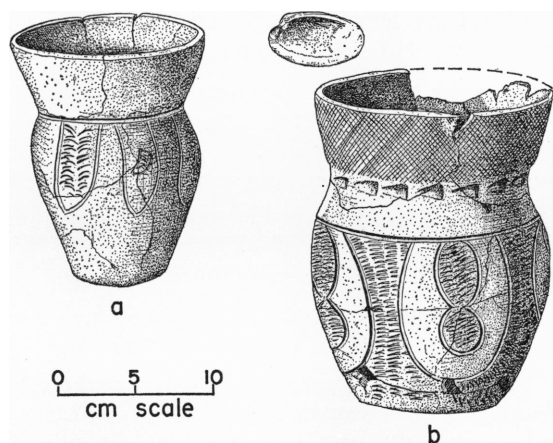


FIG. 25. Two examples of Marksville Stamped vessels found with Burial 35, Burial Group H (see Fig. 24 and Pl. 6). The mussel shell shown with b was found inside this vessel.

**POTTERY DEPOSIT 1 (NORTH 65-68.3,  
WEST 112.4-114.6, ELEVATION 109.98)**

On the north edge of the mound, 1.4 feet below the surface, a mass of potsherds covered an area about 2 feet in diameter and 0.3 foot thick (Fig. 2). Mixed with the sherds were soft, irregularly shaped, fired-clay balls, and fragments of charcoal. The fired-clay balls were apparently substitutes for cooking stones such as were used in the Mississippi Valley from Poverty Point to Coles Creek times. There are no definite shapes in this cache, but a few have finger impressions.

The sherds are the fragments of two large, poorly fired vessels. The paste is sparsely tempered with grit; the ware is light orange and tan, about 5 mm. thick, and so soft that it cannot

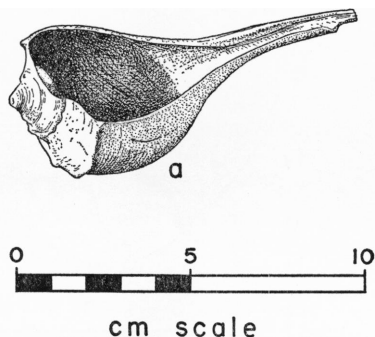


FIG. 27. Shell spoons. a. Made from a small conch shell. It is Find 74, shown in Fig. 20. b. Cut from a large fresh-water pearl oyster shell. It is Find 63, shown in Fig. 26.

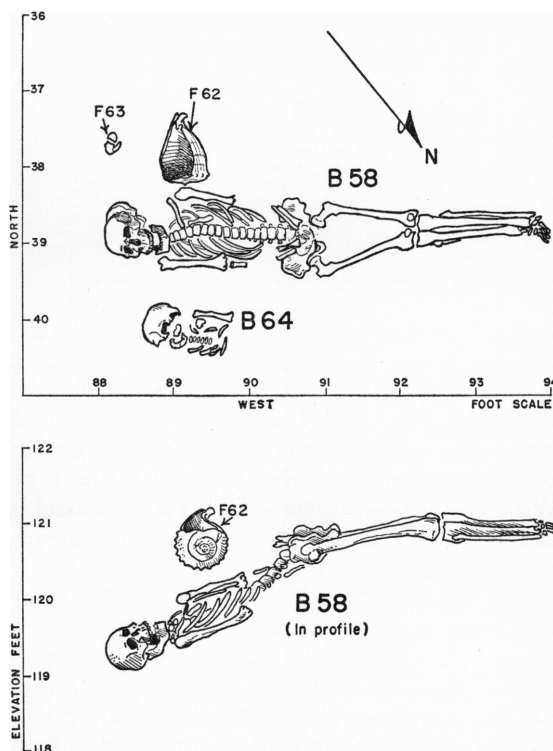


FIG. 26. Plan and profile of Burial Group I (see Fig. 2 and Pl. 7). This group was placed on the surface of the primary construction stage of Mound C and was disturbed by the collapse of tombs at mound base.

be washed, and the hands become very dusty from handling the sherds. This friability explains why only limited reconstruction was possible. Coil line breaks are usual. Large, zigzag, horizontal rocker-stamping covers the entire wall, except for the rounded base, of one

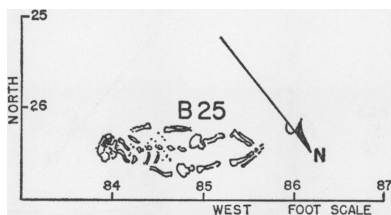


FIG. 28. Burial 25. Fragmentary bones of a small child. Listed as Burial Group L in Figs. 2 and 6.

vessel. The rim is slightly nicked. Except for the color of paste, larger size, and rounded base, this vessel conforms to the type Tchefuncte Stamped (Fig. 29).<sup>1</sup> The second vessel is also large and conforms very well, except for an unusual softness of the paste, to the type Withers Fabric-Imprinted.<sup>2</sup> This latter vessel is not illustrated, for a partial reconstruction was not possible.

The finding of a substantial portion of these two large vessels in the same basket load of mound fill suggests that this was not a casual case of the rehandling of ancient midden material. In an ordinary deposit the fragments would have been smaller, and the average basket load should have contained sherds of a number of vessels. It appears that throughout this deposit, as well as others described below, sherds of vessels that had been recently broken were piled onto the mound for disposal. Ashes were usually mixed with the sherds, which suggests that these loads of mound fill came from fire-places.

**POTTERY DEPOSIT 2 (NORTH 59.5,  
WEST 85.8, ELEVATION 117.80)**

There was another small deposit of pottery, consisting of 24 sherds, some as large as the hand, in the fill of the primary mound on the northeast side (Fig. 2). This was a grayware 8 mm. in thickness; hardness was about Moh's Scale 2. All these sherds obviously came from the same vessel, but reconstruction was impossible. Half were crudely smoothed, and the other half had impressions of a large, plain, plaited fabric, large enough to be called basketry. These sherds fall within the definition of the type Withers Fabric Imprinted. No rim sherds were found, and the shape is uncertain.

<sup>1</sup> For type description, see Ford and Quimby, 1945, 56-57.

<sup>2</sup> For type description, see Phillips, Ford, and Griffin, 1951, 73-76.

**POTTERY DEPOSIT 3 (NORTH 55.6-57.2,  
WEST 92.6-93.1, ELEVATION 116.41)**

Near the last-described pottery deposit there was a fired area in the fill of the primary mound about 1 foot in diameter. On this there was a small quantity of ash and charcoal and three sherds: two Withers and one Tchefuncte Stamped. The last-named was atypical in that it was well fired and had interior smudging.

**POTTERY DEPOSIT 4 (NORTH 49.5,  
WEST 80, ELEVATION 120.41)**

A basket load of earth which contained a few fragments of two small pots of the type Marks-ville Stamped were also on the northern side of the primary mound. Both have the typical cross-hatched rim, but not enough fragments are available for the design or all details of the shape to be determined. One had a flat, square bottom.

**POTTERY DEPOSIT 5 (NORTH 49.5,  
WEST 76.6, ELEVATION 116.45)**

Fragments of two small pottery vessels were

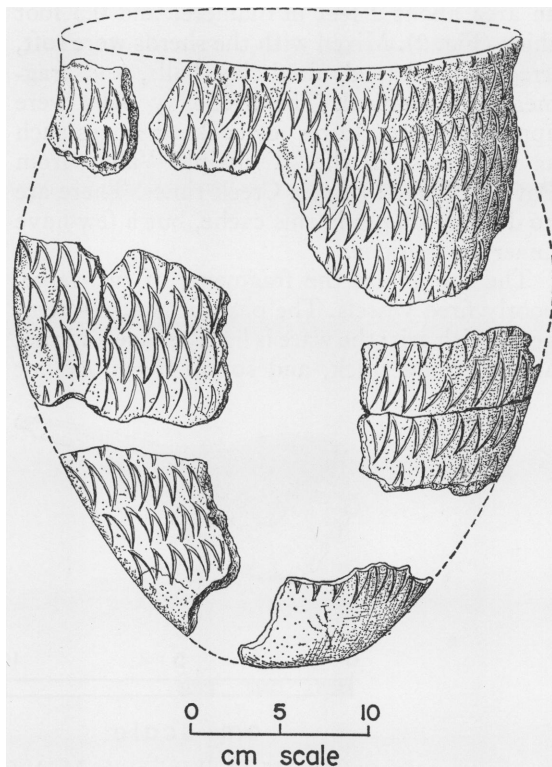


FIG. 29. Vessel reconstructed from sherds in pottery Deposit 1, Mound C.

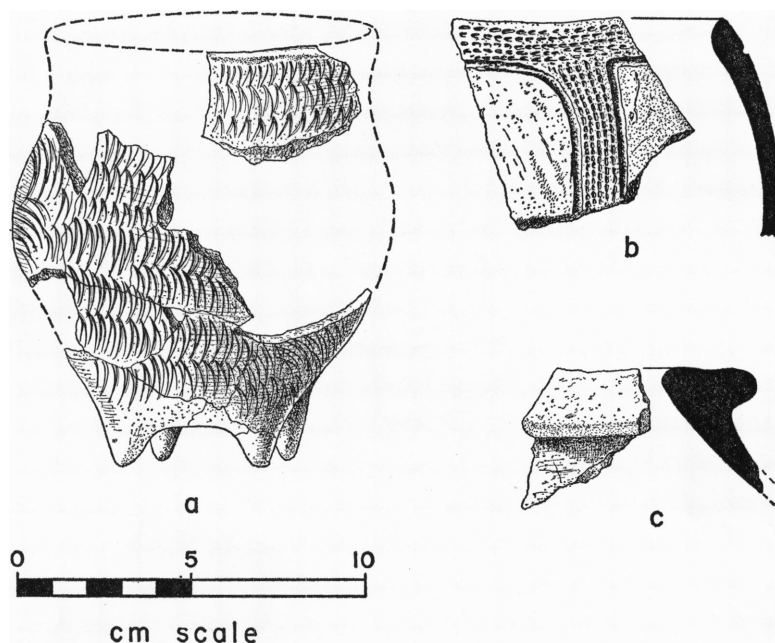


FIG. 30. Sherds from pottery deposits in Mound C. a. Type Tchefuncte Stamped, from Deposit 5. b-c. From Deposit 6. (See Fig. 2.)

in a basket load of earth near the center of the mound. It was possible to reconstruct one partially (Fig. 30a); it is obvious that the two are very similar. Both are decorated with rocker-stamping, have four feet, and conform in general to type Tchefuncte Stamped.<sup>1</sup> However, the paste is somewhat thinner and harder than is indicated in the original type description, so that the vessels approach the definition of Indian Bay Stamped.

**POTTERY DEPOSIT 6 (NORTH 38.8-39.3,  
WEST 56.3-60.5, ELEVATION 122.51)**

This was a large deposit of potsherds, mixed with smaller amounts of ash, charcoal, burned bones, and some flint chips. Evidently all this material represented the contents of more than one basket load, but it seems to have come from the same fireplace, for most of the sherds have been reconstructed into 17 pottery vessels, more or less complete. That these basket loads came from fireplaces is further suggested by the fact that some of the sherds have been re-fired. These reddish oxidized sherds fit directly onto grayware sherds with dark carbonized cores.

<sup>1</sup> For type description, see Ford and Quimby, 1945, 56-57.

It seems probable that these vessels were broken while in use around a fireplace and that some of the fragments fell into the fire and were heated to an oxidizing temperature.

In this pottery deposit there were also two small, thin, sheet-copper objects, slightly dished in shape as though they might have been covers for wooden buttons. One is circular, 18 mm. in diameter (Fig. 32m); the smaller object is oval, 10 by 6 mm. (Fig. 32l).

Partially reconstructed vessels and sherds from Pottery Deposit 6 are shown in Figs. 31, 32, and 33. In general, the paste of this pottery is fairly soft, and the vessels tend to break along the coil junctures. The tempering consists of particles of clay, and small organic inclusions have carbonized, staining small areas in the paste. Sherd cores tend to be dark. Surface colors are dull tan; gray and smudged areas are common. The surfaces are rather carelessly smoothed.

Figure 31a is the slightly flaring neck of a plain vessel (type Marksville Plain) that had a 14-cm. rim diameter. The larger part of this rim has been re-fired; one sherd is smoke-stained, and the others are buff in color.

Figure 31b is the larger part of a vessel with an undecorated body but with the cross-

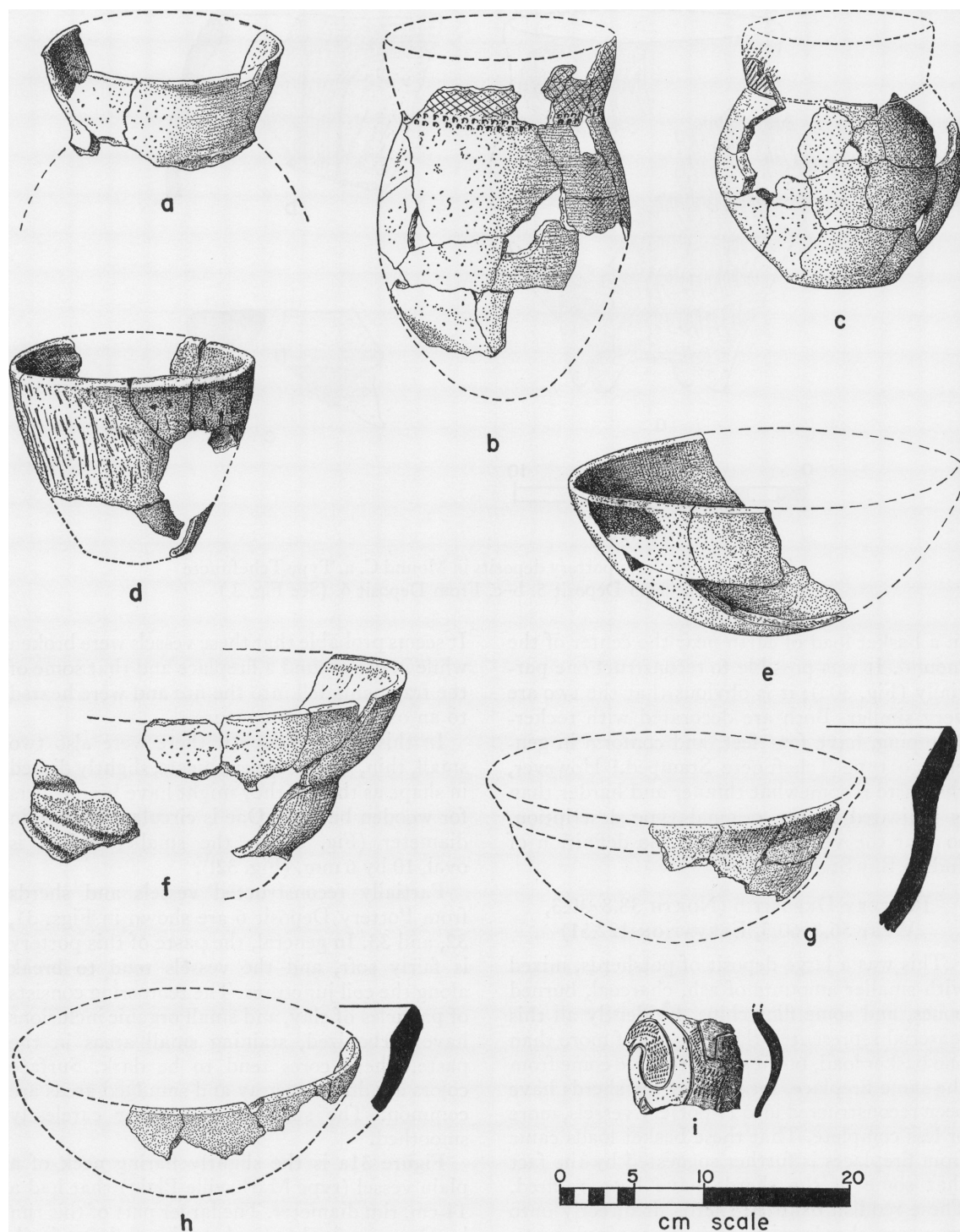


FIG. 31. Reconstructed vessels from Pottery Deposit 6, Mound C. a-c. Vessels that conform to Type Marksville Plain (b and c show the typical rim of the period). d. This has partially smoothed-over scratch marks and must be listed as unclassified. e-f. Type Marksville Plain. g-h. Red-filmed pottery, g painted only in a band around the rim. i. Sherd of Marksville Stamped.

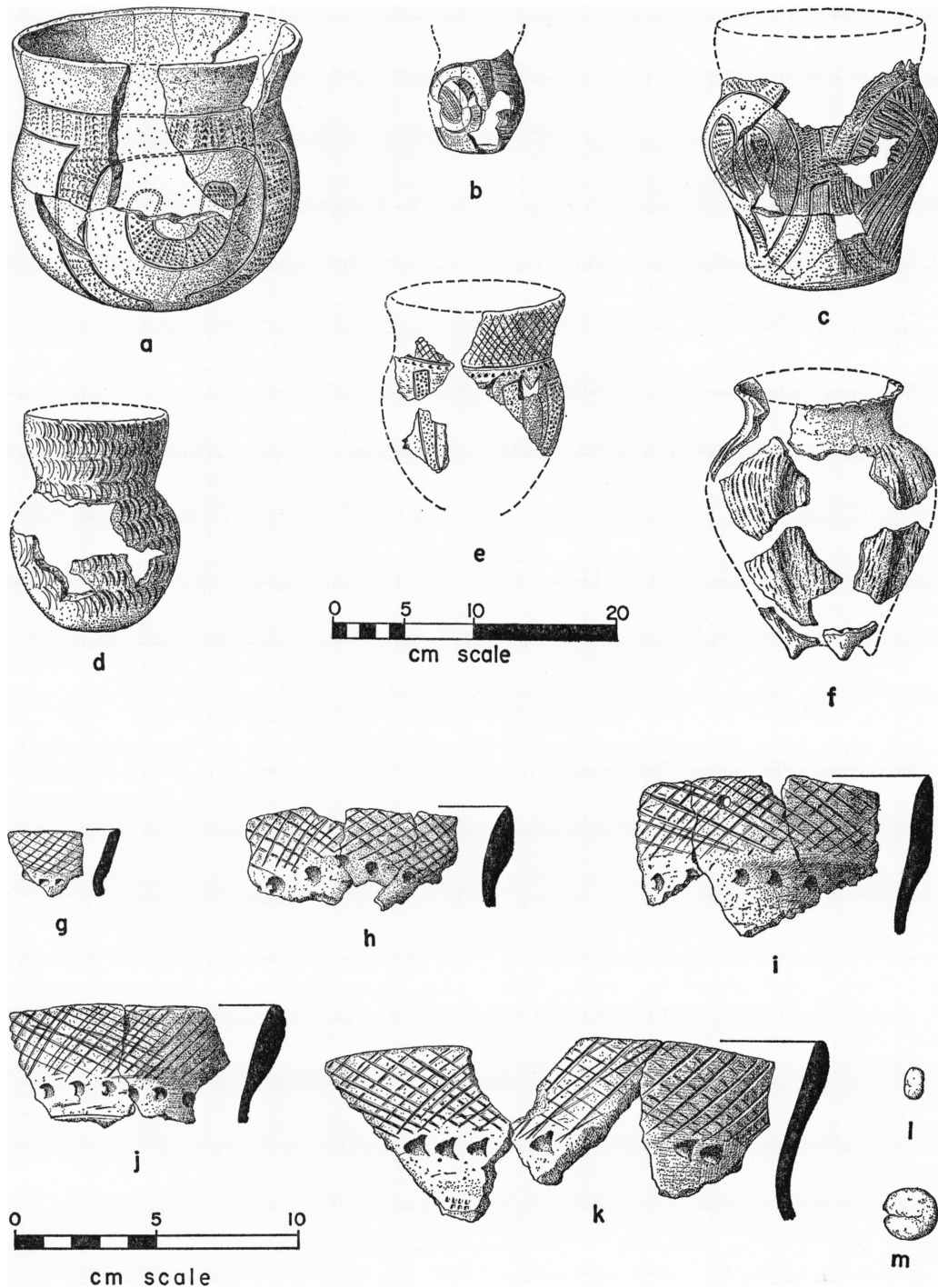


FIG. 32. Reconstructed vessels and copper objects from Pottery Deposit 6, Mound C. a-c. Type Marksville Stamped. d. Indian Bay Stamped. e. Unnamed zoned punctate decoration. f. Vessel of Type Mulberry Creek Cordmarked, with four lobes formed in the body and four feet. g-k. Incised rims. l-m. Thin copper sheets, convex shaped as though to serve as covers for wood buttons.

hatched rim typical of the Marksville ceramics (Marksville Rim Incised). This rim is slightly cambered and is set off from the vessel body by two rows of hemiconical punctations rather than the usual one row.

The body of the vessel shown in Fig. 31c is also undecorated. The small portion of the rim area that has been preserved shows that the rim decoration consisted of slanting, rather crudely drawn, incised lines, set off from the rim by an incised line. This is not typical, but over-all considerations also assign this vessel to the type Marksville Rim Incised.

Figure 31d is a portion of a deep bowl, sherds of which have also been re-fired. A crude vertical scoring on the exterior of this vessel has been partially smoothed over. This treatment is not usual for pottery of this period, so it is not possible to classify this vessel.

Figure 31e is almost half of a round-bottomed bowl, 24 cm. in diameter, made of a tan ware that has large areas of fire clouding. However, in one of the sherds the carbon has been removed by re-firing after the bowl was broken.

Some of the fragments of a bowl of unusual shape are shown in Fig. 31f. This vessel appears to have been oval in shape, perhaps about 15 cm. in longest diameter. The body wall has been formed into curved fluting or "gadroons" that converge at each end of the bowl. The vessel might have been made to imitate the hollow half of the shell of a ribbed pumpkin or squash. If true, such imitation would be most interesting, for we have little direct evidence of agriculture at this time.

Figure 31g and 31h illustrate fragments of two red-slipped bowls of almost precisely the same size and shape. One had a diameter of 26 cm.; the other, 30 cm. The paste of both is rather heavily tempered with fragments of clay; it is dark, with carbon stain, and very soft and friable. The slip is the fairly bright red that characterizes the type Larto Red Filmed and, except for softness, these vessels conform very well to the definition of that type.<sup>1</sup> Figure 31i is a portion of a small pot that conforms to the type Marksville Stamped.

Figure 32a is a round-bottomed pot, with a diameter of 19 cm. The paste is well fired and hard. Originally this vessel was smudged on the

interior and had considerable fire clouding on the exterior. However, about half of the fragments have been re-fired since the pot was broken, and the re-firing has cleaned these pieces of the carbon stain. The decoration is formed by dentate rocker-stamping in incised-line-bordered bands. The two identical units of the design are duplicated on opposite sides of the vessel. Each consists of a U-shaped band enclosed by curving bands that extend down from the rocker-stamped band that encircles the neck of the vessel. This pot is an excellent example of a specimen that lies halfway between two types that have been set up in an evolving sequence. The types are Marksville Stamped<sup>2</sup> and Troyville Stamped.<sup>3</sup> The paste, interior smudging, and geometrical simplicity of the design relate it to Troyville; the dentate rocker-stamping and the shape are Marksville features.

Figure 32b is a small vessel, 7 cm. in diameter. The vessel wall is correspondingly thin (3 mm.). This little pot has the typical Marksville shape of flat bottom, high rounded shoulders, and rim which probably was cambered, set off by a row of small hemiconical punctations. The body decoration that covers the vessel from base to rim is divided into four panels, each design repeated in the opposing panel. Opposing panels have three to four short, parallel, incised lines arranged in checker-weave-like patterns. The other panels have unroughened, line-bordered bands that start from the base of the vessel and form a spiral of one and one-half turns. The background is roughened with dentate rocker-stamping.

The checker-weave motif on this vessel is rare. It appears to be most common as one of the arrangements of straight punctated incised lines that mark the type Lake Borgne Incised of the preceding Tchefuncte Period.<sup>4</sup> It is also illustrated from the fiber-tempered pottery of the St. John's River in Florida.<sup>5</sup> Evidently this is an instance of the retention of an old design motif.

Figure 32c is a four-lobed pot with a flat round base. It is 17.5 cm. in greatest diameter. Almost certainly, this vessel had the usual incised rim with a lower border of hemiconical

<sup>1</sup> For type descriptions, see Ford, 1951, 59-61; Phillips, Ford, and Griffin, 1951.

<sup>2</sup> For type description, see Ford and Willey, 1940, 65-74.

<sup>3</sup> For type description, see Ford, 1951, 49-50.

<sup>4</sup> Ford and Quimby, 1945, 61-62, Pl. 4g, j-k.

<sup>5</sup> Moore, 1893, 608.



punctations. Some fragments of such rims in this pottery cache have the proper paste, color, and thickness, but none could be fitted to this vessel. As on the vessel just described, the decoration on opposite lobes is the same. The incised lobes bear incised, parallel, straight lines that fill the four areas formed by crossed lines that run over the bulges of the opposite lobes. A rocker-stamped, incised-line-bordered band outlines each of these incised areas. The other two lobes are similarly outlined by rocker-stamped bands. Three petal-shaped areas of rocker-stamping, outlined by incision, are placed in each of these areas. The decoration is carelessly applied. The vessel is classified as Marksville Stamped.

Figure 32d illustrates a small vessel 11 cm. in diameter and 14 cm. in height. The paste is reddish and rather soft; the vessel walls are broken along almost every coil line. It is rather crudely made. The rather large rim, divided from the body by constriction, is slightly cambered. The decoration extends from the lip to the base and consists of large rocker-stamping that encircles the vessel parallel to the rim. The instrument did not have teeth to produce dentations, and the impressions are curved as though a cylindrical tool, or perhaps a section of cane, were used. On the basis of the majority of its features, this vessel more nearly resembles the description of the type Tchefuncte Stamped than any other.<sup>1</sup>

Figure 32e is a rather unusual vessel for the Marksville period ceramic complex. The fragment indicates that the rim was about 12 cm. in diameter; the vessel height and the shape of the base are uncertain. The rather soft paste is clay-tempered, dark gray in color. The rim, which curves outward slightly, is decorated with fine, incised cross-hatching. Beneath this there are a wide incised line and a row of hemiconical punctations. The body decoration consists of small punctations zoned by rather fine incised lines. However, the vessel is too incomplete for the motif to be recognized with certainty. These bands of punctations probably formed horseshoe-shaped figures. Except for the incised line, the rim of this vessel conforms fairly well to the pattern of the period. However, the body decoration obviously is closely related

to the type Orleans Punctated of the Tchefuncte period sites.<sup>2</sup>

Another unusual vessel is shown in Fig. 32f. Aside from four sherds in mound fill, it is the only example of decoration with cord-wrapped paddle impressions found at this site. A majority of the fragments of this vessel seem to be present, but only a few can be fitted. However, there is no doubt about the shape. The paste, tempered with very small particles of clay, is unusually thin, about 3 mm. All the sherds, except two, are light orange and fairly hard. However, two fragments of this pot are dark, stained with carbon, and are somewhat softer. The hardness and oxidized firing of most of the fragments may have been accidental after the pot was broken. The vessel was about 15 cm. in diameter and 16 cm. high. On the base were four teat-shaped legs, the walls expanded to a high rounded shoulder and a constricted neck with outcurving rim. The body has been formed into four lobes. The lip is simple and notched. The vessel is covered with cord impressions from the neck to the base. The cords were fairly fine and were applied vertically. Subsequently, the neck area was smoothed and the body lightly smoothed over, partially obliterating some of the cord impressions.

In this pottery cache there were fragments of five of the typical Marksville cross-hatched rims<sup>3</sup> that could not be associated with vessel bodies (Fig. 32g-k). All have fine, incised cross-hatching above a single row of hemiconical punctations. The profiles are illustrated; all but one rim are slightly cambered.

Figure 33a-d presents four views of an unusual U-shaped vessel, 26 cm. long and 36 cm. high. Rather crudely made, it is decorated from lip to base. On one end incised-line-bordered, rocker-stamped, rectangular elements are arranged like bricks in a wall. On the other end, each of two bands of three parallel incised lines forms a scroll terminating in rather crude bird heads. The backgrounds of these motifs are roughened with dentate rocker-stamping.

In shape, this vessel is similar to one which C. B. Moore found in the Pierce Mound A near Apalachicola, Florida.<sup>4</sup> This has a red slip decoration zoned by incised lines. As Willey has

<sup>2</sup> For type description, see Ford and Quimby, 1945, 62-63.

<sup>3</sup> Ford and Willey, 1940, 85-86, Fig. 41.

<sup>4</sup> Moore, 1902, 217-228, Fig. 155.

<sup>1</sup> Ford and Quimby, 1945, 56-57.



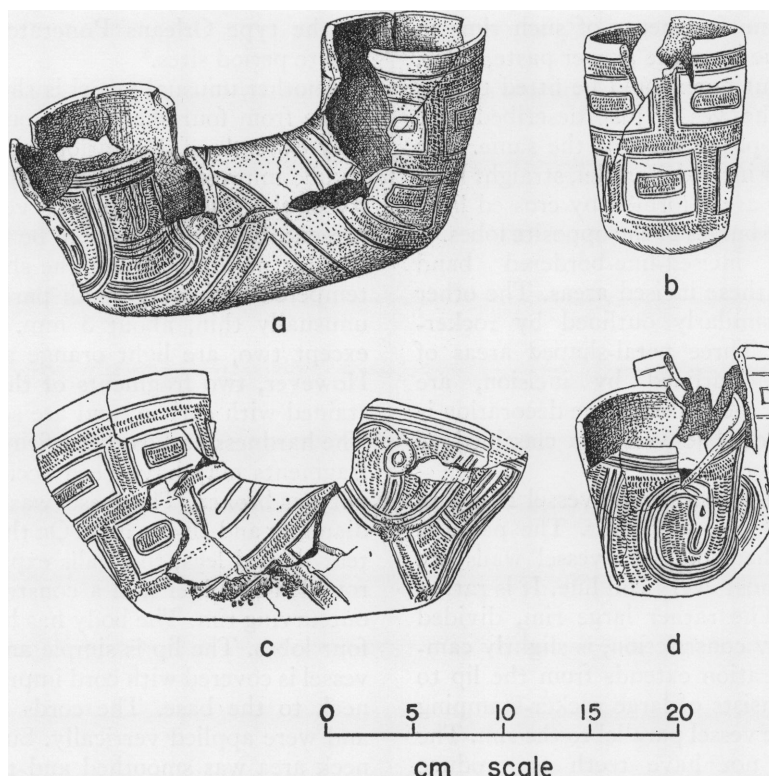


FIG. 33. Four views of an unusual vessel from Pottery Deposit 6, Mound C.

pointed out, this mound dates on the Santa Rosa-Swift Creek time level,<sup>1</sup> which is approximately coeval with Marksville. Another vessel, apparently of similar shape, comes from Minnesota. In describing the ceramics of the Hopewell-related Laurel Focus, Wilford states, "One is in the form of a rocker-curved tube with a mouth at each end, a form believed to be unique in the United States."<sup>2</sup>

#### MISCELLANEOUS POTTERY IN MOUND C

In addition to the accidental pottery deposits just described, 230 sherds were found scattered through the mound fill. Exactly where this soil was obtained is uncertain. There is no obvious borrow pit, and an inspection of the loess hills near the site did not show any camp refuse. This pottery can be classified into the types listed in Table 1. Apparently this collection is normal for the date of the mound.

The un-named red-filmed ware listed in

Table 1 is probably the red-slipped type of the Marksville period that seems to be missing to the southward, near the mouth of Red River.<sup>3</sup> As such, it serves as a connecting link between the red-filmed wares of the earlier Tchefuncte-Tchula cultural horizon and the succeeding Troyville period.

In Fig. 34q is shown an example of the peculiar thickened "Brangenburg Rim" which also occurs in Hopewell sites in the valley of the Illinois River.<sup>4</sup>

The paste of all of these sherds conforms very well to that of Marksville pottery as it is found farther south. That is, it is clay tempered, is not fired at a temperature high enough to have burned out the carbon inclusions, and, consequently, is fairly soft, about Moh's Scale 2. Surfaces are generally smoothed, but are somewhat lumpy on the pieces that have not been polished. Coil line fractures are common. Another fragment, almost identical, is shown in Fig. 30c.

<sup>1</sup> Willey, 1949, 278-282.

<sup>2</sup> Wilford, 1941, 241.

<sup>3</sup> Ford 1951, 61; Ford, Phillips, and Haag, 1955, 86-87.

<sup>4</sup> Baker *et al.*, 1941, Pl. 49; Deuel, 1952, 119.

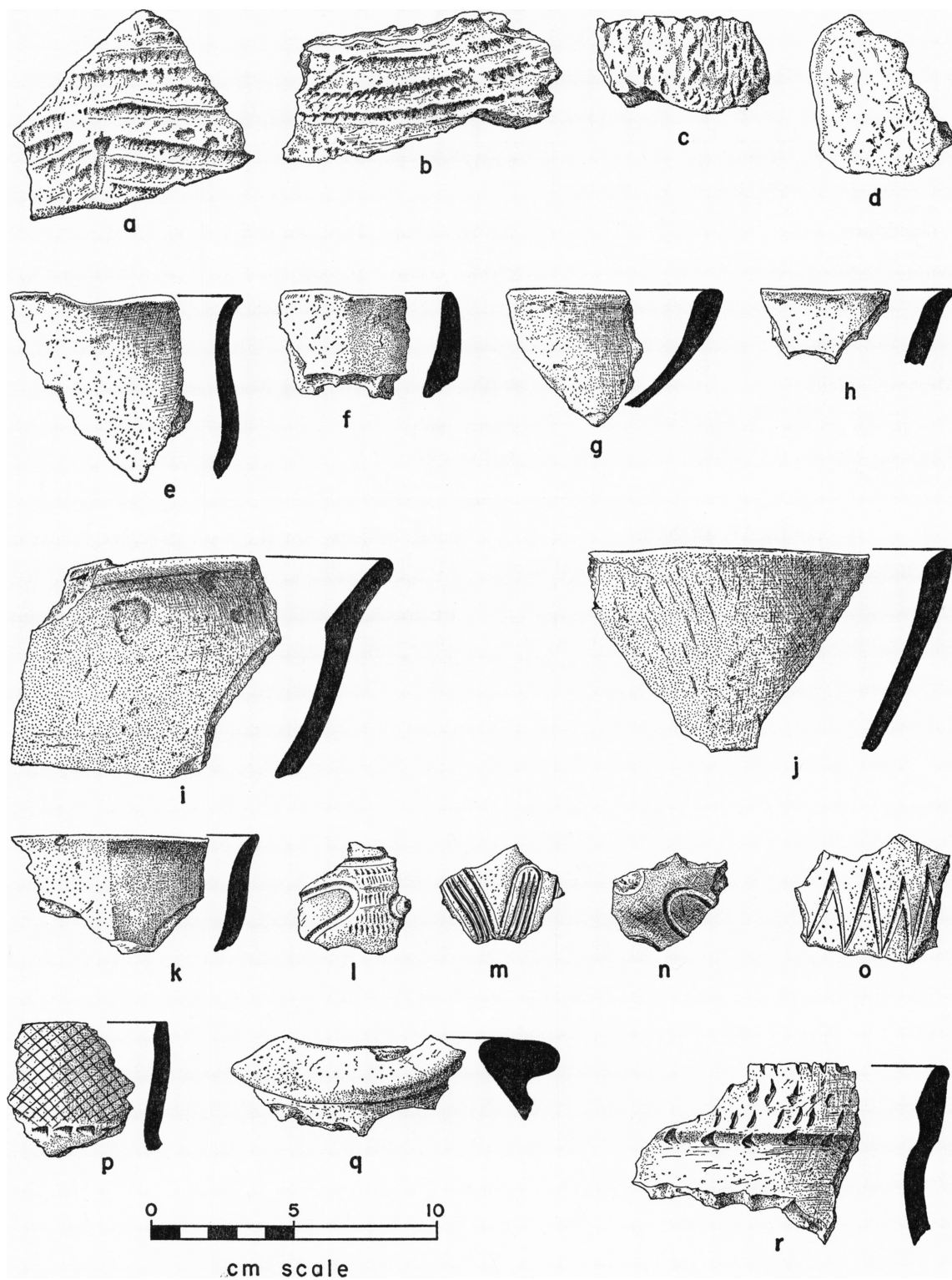


FIG. 34. Potsherds found scattered through the fill of Mound C. (See Table 1 for descriptions.)

TABLE 1  
MISCELLANEOUS POTTERY IN MOUND C

Type	No. of Sherds and Illustration	Type Description
Un-named red filmed (Larto?)	9 (Fig. 34i)	—
Marksville Red Filmed (painted and unpainted areas not separated by incised line as in type description)	6 (Fig. 34j-k)	Ford and Willey, 1940, 82-85
Mulberry Creek Cordmarked	4 (Fig. 34c)	Phillips, Ford, and Griffin, 1951, 82-87
Withers Fabric Marked	22 (Fig. 34a-b)	Phillips, Ford, and Griffin, 1951, 73-76
Indian Bay Stamped	44 (Fig. 34o)	Phillips, Ford, and Griffin, 1951, 88-90
Marksville Rim	9 (Fig. 34p)	Ford and Willey, 1940, 85-86
Marksville Stamped	17 (Fig. 34 l-m)	Ford and Willey, 1940, 65-74
Marksville Incised	10 (Fig. 34n)	Ford and Willey, 1940, 78-79
Marksville Plain	59 (Fig. 34e-f)	Ford and Willey, 1940, 59-65
Undescribed plainware (similar to Marksville Plain but with good polish)	40 (Fig. 34h)	—
Thick crude plain, not typed	8 (Fig. 34d)	—
Unclassified	2	—

#### ANIMAL BONES

Approximately 80 fragments of animal bone were found scattered through the fill of Mound C. These have been examined by George G. Goodwin of the Department of Mammalogy of the American Museum. All are fragments of the

bones of deer—for the most part, fragments of long bones that have been broken for the marrow. Goodwin believes that many of the bones are too large to be identified as from Virginia white-tailed deer and thinks it more probable that they represent the mule deer.

## MOUND B

THE SECOND OF THE TWO MOUNDS that remained of the original five in the Helena Group was Mound B (Fig. 1). It was located on a projecting finger of the lower slopes of Crowley's Ridge, just a few feet above the level flood plain that stretches out toward the Mississippi River. When the highway that runs along the foot of the ridge was relocated, the southern edge of the mound was trimmed, but fortunately not far enough to touch its central feature. The house of the manager of the plantation is just across the road, and a former manager had constructed a storm shelter into the southeastern side of the mound. Again, fortunately no damage was done.

Mound B was oval in shape, approximately 100 feet long southeast to northwest, and 60 feet wide at right angles to this dimension. A 5-foot grid was staked over the mound, aligned with its long axis so that the base line was exactly 45 degrees east of true north. Excavation was begun along the northeastern edge. By the time we were making the third 5-foot slice, it was clearly apparent that this mound differed considerably from Mound C in one important respect. Mound C was composed of loess, but Mound B was constructed of bottom-land clay. It was hard. Mattocks made little impression on it. Cutting with a turning plow pulled by the winch of the "jeep" was tried. This worked only slightly better and obviously was not practical. No cultural material was found in the fill, so it was decided to try a bulldozer.

An earth-moving contractor in Helena supplied a D-6 with a 12-foot blade. This was used to cut slices 15 feet wide across the mound along the northeast-southwest axis, leaving walls 5 feet wide standing between the slices to provide information on profiles. After some preliminary preparation of the surface, the operator was able to shave a layer 1 inch thick in each trench completely across the mound. This operation left a very clean floor which, as it did not have a chance to dry out, provided considerably more information than such floors usually do when dug by hand. Although the operator was constantly stopped so that suspicious areas might be examined, the entire mound was shaved down to its two principal features in only four hours of tractor time. If done by hand, this

work would have required weeks of time and more money than was budgeted for this portion of the project. Under the conditions presented by this mound, the use of a tractor gave results superior to those produced by hand labor. On the other hand, had a machine been used in Mound C, some of the scattered burials might have been damaged. Unfortunately, the selection of a method for excavating must be a matter of guess; there is no way to X-ray a mound before beginning work.

Outside the central tomb, described below, there were only two human skulls and a fragment of a femur. These were found while guide trenches were being dug in preparation for the bulldozing. They were only 0.5 foot beneath the surface of the mound top and were in such poor condition they could not be saved. It is uncertain whether these were the remains of Indians.

### PILE OF LOGS

In the vicinity of stake North 95, West 40, a little to the northwest of the center of the mound, soft areas appeared as the machine scraped down near the base of the mound. Also, slight evidence of collapse showed in the arrangement of the basket loads of different-colored soil visible in the profile that was left along line North 95. Bulldozing was stopped in this area, and excavation was continued by hand. We had hoped to find a tomb beneath this area, but were disappointed. In constructing the mound, the Indians had piled four large logs on the old ground surface at this point. The decay of these logs allowed niter to form in the cavities, and, as the old log molds collapsed, they produced the evidences of disturbance that was noted higher in the mound.

### TOMB A

The second disturbed area that was visible as the base of the mound was approached was toward the southeastern end of the elongated mound. It showed more definite signs of collapse; niter had formed in the cracks between the separated clods of earth. We were aware of the outline of this large tomb while at least 4 feet above the roofing timbers. Shaving with the bulldozer proceeded so successfully that this method was continued until the blade touched

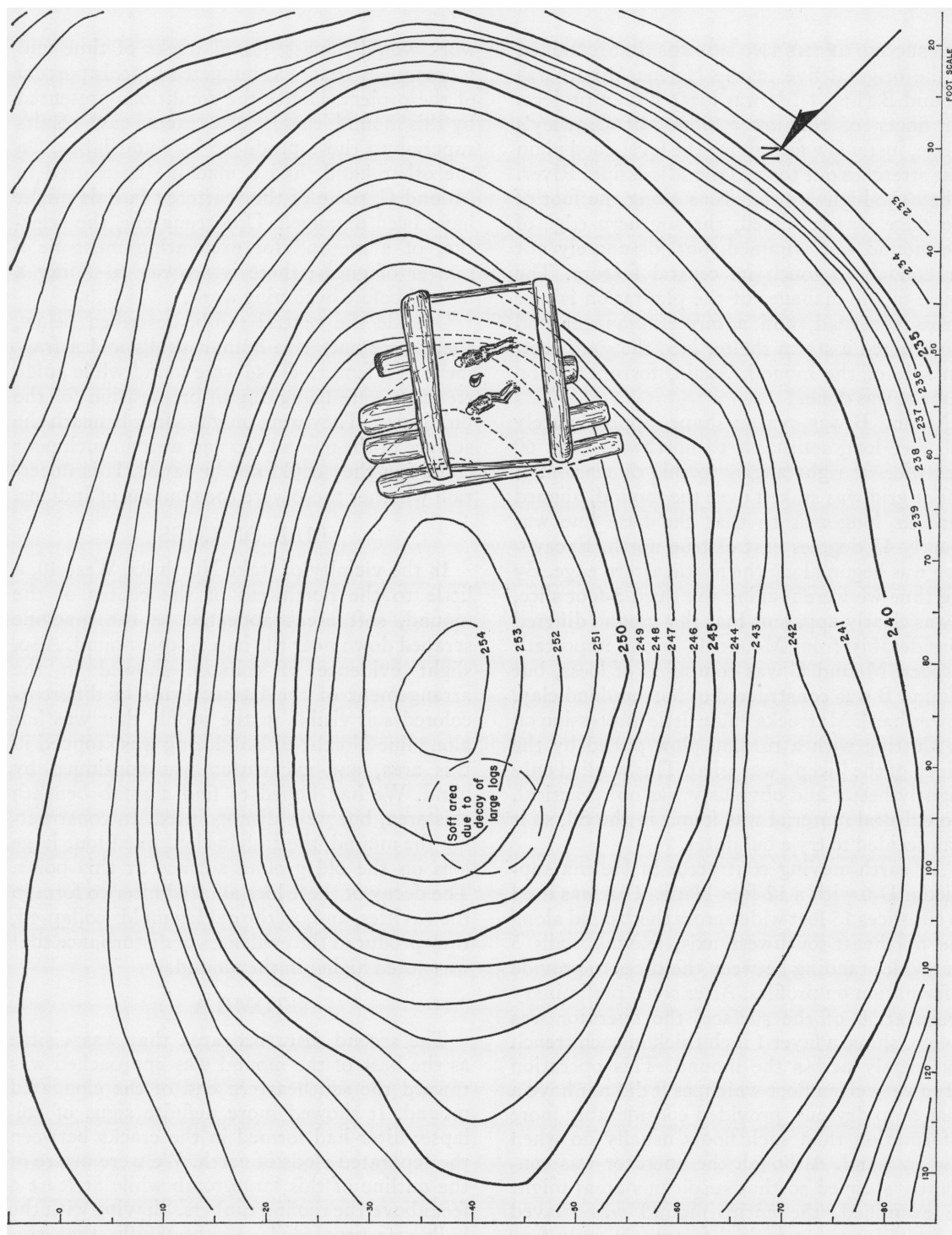


FIG. 35. Map of Mound B.

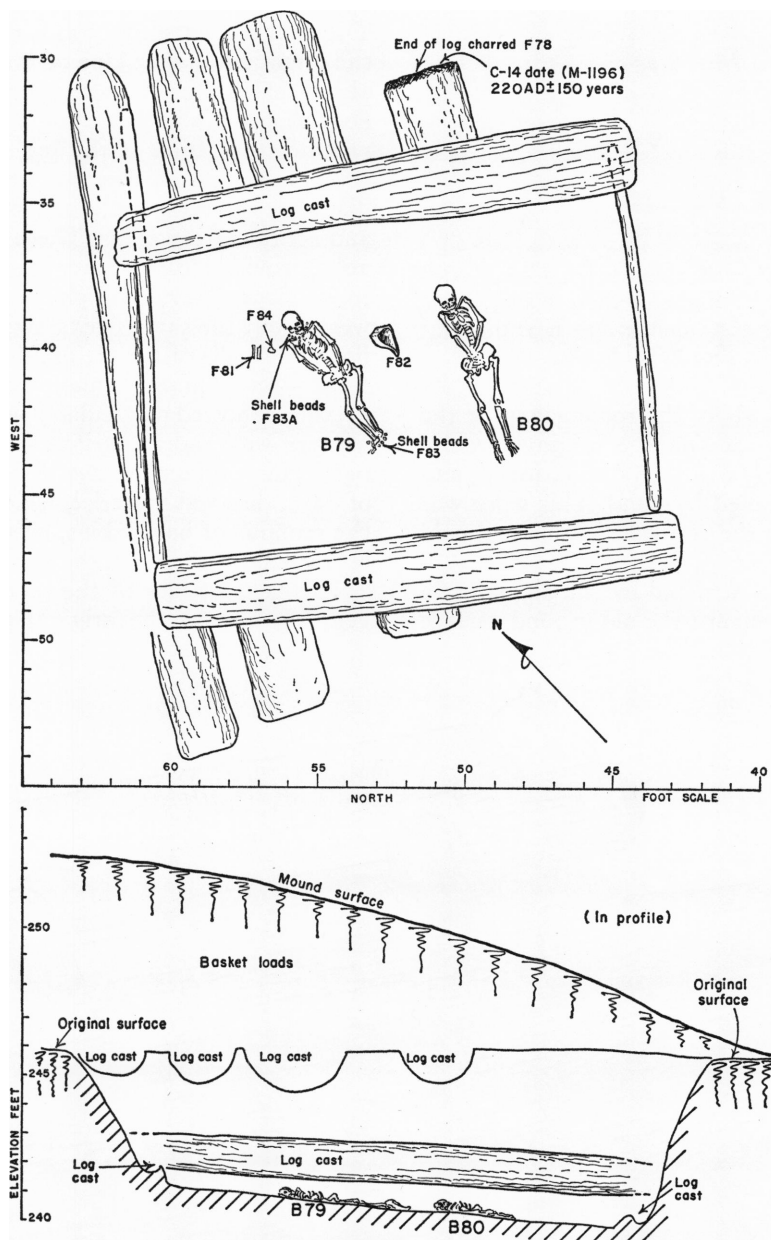


FIG. 36. Map of log-roofed tomb, Mound B.

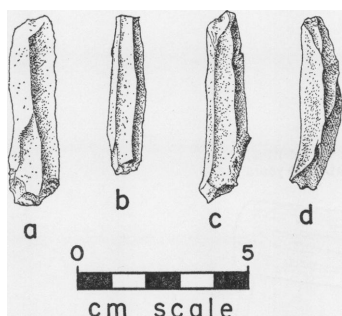


FIG. 37. Cache of lamellar blades that accompanied Burial 79, Mound B. Eight of these blades, lying parallel and touching one another, lay near the right shoulder of Burial 79. (See F81, Fig. 36.)

the top of the molds of the roofing logs at the ends, where they lay on the original ground surface. Bulldozing was then discontinued, and the tomb was cleaned by hand. This work was made difficult by the continued rains and cold weather.

Tomb A was constructed by the digging of a rectangular pit beneath the old ground surface

(Fig. 36; Pl. 8). The pit measured about 16 feet southeast to northwest and 10.5 feet in the opposite direction, and was about 5 feet deep. The floor sloped slightly toward the southeast, the direction of the slope of the hill. Small logs about 0.5 foot in diameter were placed on the floor along the walls at the southeastern and northwestern ends of the pit. Extending over these small logs, large logs at least 4 feet in diameter were placed along the northeastern and southwestern walls. These large logs probably provided direct support of the massive roofing logs that ran at right angles to them and were about the same size or slightly larger. The floor and walls of the pit had been lined with a simple-weave matting made of split cane. Impressions showed particularly well on the northwestern wall and at various spots on the floor, particularly under the two burials. A thin layer of dark, decayed material, which was probably the remains of bark, skins, or similar material, lay over the matting on the floor.

The casts of four of the roofing logs showed very plainly on the original ground surfaces

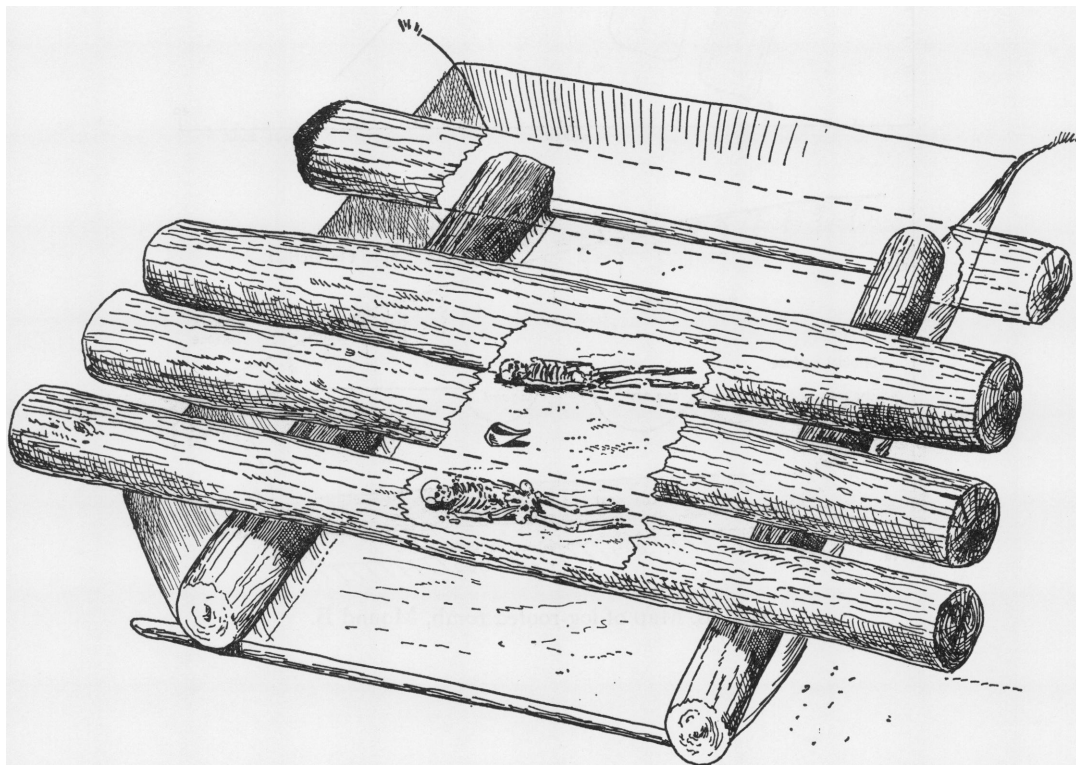


FIG. 38. Arrangement of roofing timbers of the tomb in Mound B.



where they extended beyond the edges of the pit. However, they could not be traced over the floor of the pit. There is no evidence for the logs that covered the southeastern side of the pit. Possibly these were short logs that rested on the large transverse logs, so left no impressions on the shoulders of the pit. As is shown in Fig. 36, the end of one of the roofing timbers had been charred. A sample of charcoal collected from here (Find 78) has been submitted to the University of Michigan Radiocarbon Laboratory for assay and is discussed below.

Only two burials lay on the floor of this large tomb. Burial 79, a young adult male, was extended on the back, with legs slightly flexed. At the neck were small, barrel-shaped beads made of conch shell, enough to make a string 60 cm. long (Find 83A). The fragments of two similar beads lay at the ankles (Find 83). Near the right shoulder there was a lump of bitumen, a crude sphere about 1 inch in diameter (Find 84). A few inches distant there were eight lamellar blades made from the blue-gray, Harrison County, Indiana, flint. These, all about 5 cm. long, lay side by side as though

they had been in a container, and were unused and quite sharp (Find 81; Fig. 37).

Burial 80, a mature male, lay extended on the back, parallel to Burial 79 and 5 feet to the southeast. It had no accompanying grave goods. Between the two skeletons there was a large drinking cup made from the shell of *Cassia madagascarensis*. This was badly broken, apparently when the tomb roof collapsed.

### SCATTERED MATERIAL

Undoubtedly the use of a bulldozer is partially responsible for the small amount of cultural material recovered from the fill of Mound B. However, as was noted while digging the three initial trenches, there was very little in this mound, much less than in Mound C. There were nine fragments of broken pebbles and about a dozen flint flakes. Only two sherds were found. One is an Indian Bay Stamped body sherd; the other is red-slipped, a bowl rim fragment that is identical in profile to the red-slipped bowls from the large Pottery Deposit 6 in Mound C (Fig. 31g).

## RADIOCARBON DATING

THROUGH THE INTERCESSION of James B. Griffin the University of Michigan Radiocarbon Laboratory has provided dates for four carbon specimens collected at the Helena Crossing site. Three come from tomb roofing logs in Mound C; one is from Mound B.

tween 290 B.C. and 10 A.D. There is always one chance of three that the true date is earlier or later than these figures.

The second factor bearing on the estimates of actual dates is that three of the samples, M-1196, M-1198, and M-1199, came from large

TABLE 2  
RADIOCARBON DATES OF FOUR SPECIMENS FROM HELENA CROSSING SITE

Mound and Laboratory Number	Specimen	Elapsed Time Before 1960 A.D.	Date
Mound B M-1196	Charcoal from the charred end of a roofing log of the large tomb (see Fig. 36)	1740 ± 150	220 A.D. ± 150
Mound C M-1197	Charcoal from a roofing log of Tomb B (see Fig. 13)	2100 ± 150	140 B.C. ± 150
M-1198	Charcoal sample from floor of burned Tomb D (see Fig. 18)	1625 ± 150	335 A.D. ± 150
M-1199	Charcoal sample from roofing log over west end of Tomb D (see Fig. 18)	1930 ± 150	30 A.D. ± 150

It is pointed out above that the burial groups high up in Mound C were affected by the collapse of the roofing timbers of the tombs at mound base, indicating that the mound was constructed in a relatively short time.

In attempting to estimate the actual calendrical date on the basis of the radiocarbon evidence, one must keep two factors in mind. First, we must consider the probability expressed by the 1-sigma range. For example, the date given for Sample M-1197 of 140 B.C. ± 150 really means that there are two chances out of three that the true date was somewhere be-

logs 3 to 4 feet in diameter. It has been demonstrated that only the outer, growing layer of a tree deposits new carbon; charcoal from inner layers contains carbon 14 that has already begun to lose its radioactivity. It is rather certain that these samples include older carbon from toward the centers of the roofing logs, and thus the determined dates will tend to be somewhat earlier than the actual cutting dates of the trees. In view of this last consideration it is strange that the sample from the smaller log that formed part of the roof of Tomb B (M-1197) should have the earliest date.

## SUMMARY AND CONCLUSIONS

THERE SEEMS TO BE NO reason to suspect that the construction of Mounds B and C represents any great span of time. On the basis of this assumption, it seems fair to consider the two structures together. The information obtained in this excavation can be summarized in a trait list, as follows:

### STRUCTURAL FEATURES

#### MOUND C

Five log-roofed tombs at base of mound; one burned  
Six burial groups placed higher up in the mound, most of them on the surface of the primary mound  
Primary mound over first group of log tombs  
Repair of primary mound pit caused by collapse of Tomb B  
Construction of secondary mound  
Digging stick marks show on tomb walls  
One tomb burned after it had been covered with earth  
Wooden frame placed in oval pit beneath floor of Tomb B  
Deposits of broken pottery in mound fill, evidently vessels broken in use and dumped into the mound before the fragments were scattered

#### MOUND B

One large, log-roofed tomb, excavated beneath floor of mound  
Use of cane mats to line tomb

### BURIAL FEATURES

Bundle burials  
Extended burials  
Occipital deformation of most skulls

### ORNAMENTS AND CLOTHING

Twined fabric of bast fibers  
Beads made of marine conch  
    Doughnut-shaped, small and large  
    Cylindrical, small and large  
    Barrel-shaped, small and large  
*Marginella* shell beads, pierced at end and sides  
Small beads made of unidentified hollow globes  
River pearl beads  
Beads placed around neck, upper arms, wrists, and ankles  
Beads woven or sewed into armlet and wristlet bands  
Belt and sash made of beads and canine teeth of red wolf  
Bi-cymbal, copper earspools wound with cord and held in hands

### MISCELLANEOUS OBJECTS

Copper staff ferrule  
Piece of sheet mica, probably a mirror  
Flake knives of Harrison County, Indiana, flint  
Copper button covers (?)  
Cups made of marine conch shell  
Copper-jacketed panpipes

### POTTERY

Marksville Plain  
Thick crude plain, not typed  
Red filmed ware, not typed  
Withers Fabric Marked  
Mulberry Creek Cordmarked  
Tchefuncte Stamped  
Indian Bay Stamped  
Marksville Rim  
Marksville Red Filmed  
Marksville Stamped  
Marksville Incised  
U-shaped vessel  
Pot form with round or flat bottom; some with four lobes  
Open bowls with rounded bottoms  
One cordmarked vessel with four small feet

As was expected, the two excavated mounds of the Helena Crossing Site share a number of traits with the fully developed Hopewell culture of Illinois to the north, and in ceramics especially with the Marksville culture sites to the south. With the exception of recent work by Gregory Perino, the Illinois excavations have been rather well described. The published information on burial practices to the southward is based on only two sites.<sup>1</sup> Excavation of the type site, Marksville, has not been published.

No attempt at extensive comparisons is made in this paper. The entire subject of the widespread Hopewell culture needs a review. In this, considerable attention should be given to the question of origin. For some years it has been clear that Hopewell must in some way be related to the Middle American "Formative" and to the basic culture of the Andean region of South America. The radiocarbon dates available at present make it appear that these influences entered the Mississippi Valley from the south. This is one of the principal questions in North American archeology, and the complete answer is not yet in sight.

<sup>1</sup> Ford and Willey, 1940; Cotter and Corbett, 1951.

## APPENDIX: HELENA CROSSING CRANIAL REMAINS

ROSELLE MARTIN TEKINER

THE PRESENT REPORT is a description of the human cranial material from 19 burials at the Helena Crossing Site. All but two of these skulls were in a condition to be wholly or partially reconstructed. In some cases warping was so extensive that measurements would be of no value, and these have been eliminated from the tables of measurements.

Sex was determined on the basis of skull characters and checked with the pelvis when it was available. Age was assessed on the basis of suture closure and teeth eruption.

Measurements that were approximated because of missing landmarks or poor contacts are so marked. Approximation was attempted only in those cases in which, in the judgment of the observer, there was a good chance of accuracy within 2 to 3 mm.

All the reconstructed crania had been artificially deformed, with the possible exception of Burial 72, which, if intentionally deformed at all, had been so only to a slight extent.

The typical deformation was a flattening of the occiput centered in the lambdoid area, the flattening often extending upward and affecting the adjacent sections of both parietals to a greater extent than the occiput itself. This type of deformation could have been accomplished by strapping the head of the infant to a cradle-board. It is best illustrated in the photographs of Burial 31, the skull of a child of about 10 years of age. It possesses this occipital deformation to a marked degree, as do the crania of the other children in this series, compared with those of the adults.

Burial 34, in addition to the above described deformation, was subjected to an artificial flattening of the frontal bone, giving the skull an appearance quite unlike that of any of the others. As a result, the length, breadth, and height measurements deviate greatly from the remainder of this cranial series.

A common feature of these Helena Crossing crania is the presence of a ridge in the median sagittal plane along the entire top of the vault, which can be seen best in the frontal views in Pls. 9-12. As a result, the crania have a keel-shaped vault, some to a greater extent than others. There is no consistent pattern of rela-

tionship between the amount of lambdoid flattening and the extent of the ridging. It does not seem likely that this area of the vault could have been thus affected by the occipital deformation to which the skull was subjected. It appears to be a natural characteristic of these people.

Following are descriptions of each of the skulls.

### BURIAL 34, YOUNG ADULT MALE

#### Plate 9

This complete skull was excavated intact and was the only one requiring no reconstruction. It exhibits the described type of occipital deformation plus a frontal flattening, which could have been caused by a counter pressure applied on the forehead during early growth. It has the smallest length measurement (168 mm.) of the adult male series and the greatest breadth measurement (147 mm.), giving it a cranial index of 87.5. The great deviation from the other skulls is undoubtedly due to the additional frontal deformation, which, compressing the skull both anteriorly and posteriorly, caused a compensatory large bulging of the entire parietal regions. There is but a slight sagittal ridging. The additional frontal deformation may have partially obliterated this feature. The supraorbital ridges are moderate, the external occipital protuberance is moderate, and the occipital crest is moderate. There are large parietal eminences. A Wormian bone is located on the left parietal at the coronal suture, and there is one also at the posterior end of the sagittal suture.

The upper central incisors are slightly shovel-shaped. The cusps of the lower molars are worn off. The upper molars show slight wear on the cusps. The first right lower molar and the second left lower molar were lost before death. Four of the molars have dental caries.

### BURIAL 72, YOUNG ADULT MALE

#### Plate 10

This cranium was reconstructed from many pieces. The mandible is missing. There was a slight warping, making for poor articulation at the coronal suture. A 2-mm. opening there may

TABLE 3  
CRANIAL MEASUREMENTS (IN MILLIMETERS) OF ADULT MALES

	Burial Nos. and Catalogue Nos.			
	34 99.1-2119	72 99.1-2120	28 99.1-2122	80 99.1-2198
Length	168.0	186.0 <sup>a</sup>	173.0	172.0
Breadth	147.0	136.0	134.0	133.0
Basion-bregmatic height	139.0	153.0	152.0 <sup>a</sup>	147.0
Minimum frontal breadth	96.0	99.0	96.0 <sup>a</sup>	102.0
Nasion-basion length	104.0	118.0 <sup>a</sup>	104.0 <sup>a</sup>	95.0
Prosthion-basion length	104.0	111.0 <sup>a</sup>	97.0 <sup>a</sup>	86.0
Frontal chord	107.0	112.0	115.0	114.0
Facial breadth	142.0	137.0	135.0 <sup>a</sup>	—
Facial height	126.0	—	121.0 <sup>a</sup>	116.0
Upper facial height	78.0	78.0 <sup>b</sup>	75.0 <sup>a,b</sup>	71.0 <sup>b</sup>
Nasal breadth	24.0	28.0	25.0	26.0
Nasal height	54.0	55.0	51.0	51.0
Orbital breadth	41.0	44.0	40.0 <sup>c</sup>	41.0
Orbital height	36.0	39.0	36.0 <sup>c</sup>	34.0
Palate, length	47.0	—	46.0 <sup>a</sup>	—
Palate, breadth	43.0	42.0	—	—
Mandibular height	34.0	—	35.0 <sup>d</sup>	34.0
Bigonial breadth	93.0	—	106.0	100.0
Minimum breadth of ascending ramus	34.0	—	32.0	33.0
Ramus, height	70.0	—	61.0	61.0
Bicondylar breadth	119.0	—	117.0	—
Auriculo-bregmatic arc	325.0	325.0	332.0	339.0
Median sagittal arc	340.0	370.0	371.0	376.0
Cranial index	87.5	73.1 <sup>a</sup>	77.5	77.3
Length-height index	82.7	82.3 <sup>a</sup>	87.9	85.5
Height-breadth index	94.6	112.5 <sup>a</sup>	113.5 <sup>a</sup>	110.5
Mean height, index	88.3	95.0 <sup>a</sup>	99.0 <sup>a</sup>	96.4
Total facial index	88.7	—	88.9 <sup>a</sup>	—
Upper facial index	54.9	56.2	55.6	—
Nasal index	44.4	50.9	49.0	51.0
Orbital index	87.8	88.6	90.0	82.9

<sup>a</sup> Approximate.

<sup>b</sup> Corrected from supradentale.

<sup>c</sup> Right orbit only.

<sup>d</sup> Corrected from infradentale.

have affected the accuracy of the length measurement. Measurements involving the landmark basion have been approximated, owing to a small missing part of the anterior part of the foramen magnum.

There appears to be no significant deformation. The sagittal ridging is present to a pronounced extent. The supraorbital ridges and the external occipital protuberance are moderate in size. There are no Wormian bones.

All the maxillary teeth are present, and there is no dental caries. The incisors are not shovel-shaped. The molar cusps are worn off.

#### BURIAL 31, CHILD OF ABOUT 10 YEARS

The skull was reconstructed almost entirely, but both zygoma are incomplete, and the facial width was approximated.

The described type of occipital deformation is present to a pronounced degree. It affects the entire lambdoid area, including the parietals and the occiput. There is a moderate ridging of the vault. The frontal bone is narrow, the forehead is bulging, and there are large parietal bosses. There is one Wormian bone on the right parietal at the posterior end of the sagittal suture.

The second lower molars are almost completely erupted. All second premolars are beginning to erupt. There are no deciduous teeth present. The upper central incisors are shovel-shaped. The first lower left molar is caried. There is an extreme overbite with pronounced alveolar prognathism.

BURIAL 28, OLD ADULT MALE

Plate 11

The skull was reconstructed almost completely. Part of the left zygomatic arch is

missing, making it necessary to approximate facial breadth. The anterior end of the foramen magnum was chipped, so that measurements involving basion are indicated as approximate. The teeth are missing, and allowance for these was made in assessing facial height.

The deformation is concentrated in the median parietal area above lambda. The vault ridge is pronounced. The supraorbital ridges are slight, and there is no external occipital protuberance. There are moderate parietal eminences.

TABLE 4  
CRANIAL MEASUREMENTS (IN MILLIMETERS) OF ADULT FEMALES

	Burial Nos. and Catalogue Nos.				
	29 99.1-2125	30 99.1-2199	67 99.1-2200	35 99.1-2201	24 99.1-2203
Length	175.0	168.0 <sup>a</sup>	—	166.0	—
Breadth	128.0	135.0	—	—	—
Basion-bregmatic height	146.0 <sup>a</sup>	—	—	—	—
Minimum frontal breadth	85.0	—	102.0 <sup>a</sup>	—	—
Nasion-basion length	—	—	—	—	—
Prosthion-basion length	—	—	—	—	—
Frontal chord	109.0	108.0 <sup>a</sup>	120.0 <sup>a</sup>	115.0	—
Facial breadth	—	—	132.0 <sup>a</sup>	—	—
Facial height	—	—	121.0	108.0	—
Upper facial height	—	—	72.0	69.0 <sup>b</sup>	—
Nasal breadth	26.0	28.0	25.0	—	—
Nasal height	—	48.0	51.0	—	—
Orbital breadth	—	—	46.0 <sup>c</sup>	43.0 <sup>c</sup>	—
Orbital height	—	—	38.0 <sup>c</sup>	—	—
Palate, length	—	—	—	—	—
Palate, breadth	38.0	—	40.0	—	—
Mandibular height	35.0	—	34.0	35.0 <sup>d</sup>	26.0
Bigonial breadth	95.0	—	112.0	—	90.0
Minimum breadth of ascending ramus	36.0	—	35.0 <sup>c</sup>	39.0 <sup>c</sup>	32.0
Ramus height	70.0	—	—	52.0	51.0
Bicondylar breadth	—	—	—	—	108.0
Auriculo-bregmatic arc	308.0	—	—	—	—
Median sagittal arc	358.0	—	—	—	—
Cranial index	73.1	80.4 <sup>a</sup>	—	—	—
Length-height index	83.4	—	—	—	—
Height-breadth index	114.0 <sup>a</sup>	—	—	—	—
Mean height index	96.4 <sup>a</sup>	—	—	—	—
Total facial index	—	—	91.7 <sup>a</sup>	—	—
Upper facial index	—	—	54.5 <sup>a</sup>	—	—
Nasal index	—	58.3	49.0	—	—
Orbital index	—	—	82.6	—	—

<sup>a</sup> Approximate.

<sup>b</sup> Corrected from supradentale.

<sup>c</sup> Right.

<sup>d</sup> Corrected from infradentale.

**BURIAL 15, CHILD OF ABOUT 10 YEARS**

The right half of the facial bones and the top of the right ascending ramus are missing.

There is pronounced occipital deformation which flattened the parietal and the occiput. There is a moderate to pronounced ridging of the top of the vault in the median sagittal plane. The parietal eminences are moderate. There are two Wormian bones on each parietal at the lambdoid suture.

A deciduous upper left canine and a deciduous upper right first premolar are present. The second premolars are completely erupted, and the second molars have not as yet erupted. The incisors are shovel-shaped. There is no dental caries.

**BURIAL 29, MIDDLE-AGED TO OLD FEMALE**

The basilar portion of the occiput is missing, and the facial bones are fragmentary. The top of the right ramus is missing from the mandible.

There is moderate flattening in the parietal area above lambda, with the occiput seeming to be unaffected. The supraorbital ridges are slight, and the forehead is narrow and bulging. There is a large external occipital protuberance. The sagittal ridge is moderate. The teeth are small and worn to the pulp cavity.

**BURIAL 12, CHILD OF 11 TO 14 YEARS**

This skull, which was reconstructed almost entirely, is moderately flattened in the entire lambdoid area and has a pronounced sagittal ridge. The forehead is projecting, the occiput smooth, and there is a slight nuchal crest. There is moderate facial prognathism.

The incisors are shovel-shaped. The second mandibular molars have slightly worn cusps. There is caries in both lower first molars.

**BURIAL 61, CHILD OF 13 TO 15 YEARS,  
PROBABLY FEMALE**

The skull lacks most of the facial bones, the left anterior portion of the frontal, and the squamous portion of both temporals. All the maxillary and mandibular teeth are intact.

The entire lambdoid area is flattened to a pronounced degree. The sagittal ridge is moderate. There are no supraorbital ridges, and the occiput is smooth. There are strong parietal eminences.

The incisors are shovel-shaped. There is slight wear on the second molars and caries in

the second right lower molar. The lower third molars are visible in the bone. The upper jaw is not developed fully enough to provide space for the third molars.

**BURIAL 80, MIDDLE-AGED ADULT MALE**

A portion of the right temporal bone and the zygomatic arches are missing from this skull.

There is pronounced flattening of the parietals and the occiput in the lambdoid area. There are a slight sagittal ridge, moderate supraorbital ridges, a moderate occipital crest, and a slight external occipital protuberance. The parietal eminences are moderate. There are many dental caries.

**BURIAL 30, OLD ADULT FEMALE**

Few measurements were obtainable on this skull, since most of the landmarks are missing. Head length was approximated, since a portion of the frontal bone is missing, the end point of the break being approximately at glabella. The basilar portion of the occiput is missing as are also most of the right facial bones.

There is a moderate flattening in the entire lambdoid area, and the ridging in the median sagittal plane is moderate. The occiput is smooth.

**BURIAL 67, YOUNG TO MIDDLE-AGED ADULT,  
PROBABLY FEMALE**

Length, breadth, and height could not be measured, since portions of both parietals and the occipital bone are missing. Most of the face and the mandible have been reconstructed.

Owing to the fragmentary nature of the skull, the extent of the deformation cannot be determined. The supraorbital ridges are slight. The upper central incisors are shovel-shaped. All the mandibular molars are intact, and they have no caries.

**BURIAL 35, OLD ADULT FEMALE**

Most of the right half of the cranium was reconstructed, as were also small portions of the articulating parts of the left parietal, left frontal, and left occiput. The mandible is complete, except for the left ramus.

The entire lambdoid area is moderately flattened. Sagittal ridging is pronounced. There are a slight occipital crest, a slight supraorbital ridge, and a moderate parietal eminence.

The teeth have been worn to the pulp cavity.



TABLE 5  
CRANIAL MEASUREMENTS (IN MILLIMETERS) OF CHILDREN

	Burial Nos. and Catalogue Nos.			
	31 99.1-2121	15 99.1-2194	61 99.1-2197	12 99.1-2196
Length	156.0	163.0	166.0	167.0
Breadth	131.0	130.0	140.0 <sup>a</sup>	121.0
Basion-bregmatic height	143.0	154.0	146.0	144.0
Minimum frontal breadth	83.0	90.0	—	84.0
Nasion-basion length	95.0	101.0	107.0	103.0
Prosthion-basion length	85.0	91.0	88.0	93.0 <sup>a</sup>
Frontal chord	105.0	114.0	110.0	112.0
Facial breadth	114.0 <sup>a</sup>	—	—	111.0 <sup>a</sup>
Facial height	108.0	106.0	112.0	109.0
Upper facial height	63.0	61.0	70.0	64.0 <sup>b</sup>
Nasal breadth	27.0	24.0	—	25.0
Nasal height	42.0	47.0	54.0	47.0
Orbital breadth	39.0 <sup>c</sup>	39.0	—	39.0 <sup>c</sup>
Orbital height	35.0 <sup>c</sup>	34.0	—	34.0 <sup>c</sup>
Palate, length	40.0	40.0	45.0	—
Palate, breadth	33.0	44.0	37.0	—
Mandibular height	30.0	27.0	28.0	26.0 <sup>b</sup>
Bigonial breadth	84.0	90.0	93.0	71.0
Minimum breadth of ascending ramus	30.0	31.0	34.0	33.0
Ramus height	50.0	51.0	50.0	47.0
Bicondylar breadth	100.0	—	113.0	95.0 <sup>a</sup>
Auriculo-bregmatic arc	312.0	335.0 <sup>a</sup>	325.0	306.0
Median sagittal arc	347.0	364.0	351.0	360.0
Cranial index	83.9	79.7	84.3	72.5
Length-height index	91.7	94.5	87.9	83.2
Height-breadth index	109.1	118.4	104.3	119.0
Mean height index	96.6	105.1	95.4	100.0
Total facial index	94.7	—	—	98.2 <sup>a</sup>
Upper facial index	55.3	—	—	57.1 <sup>a</sup>
Nasal index	62.8	51.1	—	53.2
Orbital index	92.3	87.2	—	87.2

<sup>a</sup> Approximate.<sup>b</sup> Corrected from supradentale.<sup>c</sup> Right.

The second and third right lower molars and the third left lower molar were lost before death. There are many dental caries.

#### BURIAL 41, YOUNG ADULT MALE

Owing to extreme warping, probably from earth pressure, the measurements of this skull are not included in the tables of measurements. Despite this warping, the following observations can be made. The sagittal ridging is pronounced, and the lambdoid area is slightly flattened. There is a large external occipital protuberance. The available teeth have no caries.

#### BURIAL 24, SUBADULT TO YOUNG ADULT FEMALE

The extreme warping, which compressed both parietals, caused too great a distortion of the skull for any measurements to be meaningful. The mandible is complete and unwarped.

There is a slight flattening of the parietals above lambda. The occiput protrudes and seems not to have been affected by the deformation. There is moderate sagittal ridging. All the upper incisors are extremely shovel-shaped. The cusps are worn off the first and second lower molars. The third lower molars have no sign of wear.

**BURIAL 79, YOUNG ADULT, PROBABLY MALE**

This skull could be only partially reconstructed, and no measurements were possible. There is pronounced flattening in the lambdoid area, particularly on the parietals. The occipital crest is moderate, and the supraorbital ridges are slight to moderate. There are several small Wormian bones at the lambdoid suture.

A broken fragment of the mandible contains three molars. The first has the cusps on the labial border worn off, the second has slight wear on the cusps, and the third is unworn. These and three additional molars and one premolar have no caries.

**BURIAL 36, OLD ADULT FEMALE**

Extensive warping made a proper reconstruction impossible. There is pronounced flattening of the lambdoid area, particularly in the parietal region. The teeth are worn to the pulp cavity. The second right lower molar was lost before death.

**BURIAL 58, CHILD BETWEEN NINE AND 12**

These remains were fragmentary, so that only a small portion of the superior part of the cranium could be reconstructed, plus a part of the maxilla. The parietal area is flattened above lambda. The occiput is missing, and the sagittal ridge is pronounced. Two molar teeth (probably the second) have dental caries.

**BURIAL 26**

A reconstruction was not attempted, since the bones were heavily calcined.

**BURIAL 68, AN INFANT**

The frontal bone of this fragmentary infant cranium has the sagittal ridge.

**DISCUSSION**

In this Helena Crossing series it is good fortune to have one cranium that appears to be undeformed. This adult male (Burial 72) has a dolichocranic braincase, the cranial index being 73.1. The length-height index of 82.3 and the breadth-height index of 112.5 indicate an extremely high vault. The facial characteristics are as follows: the face is narrow and high, with an upper facial index of 56.2; the nasal aperture is of moderate breadth, with a nasal index of 50.9; the orbits are high and narrow, the orbital index being 88.6.

The cranial indices of the other skulls range from 72.5 to 87.5. Owing to the deformation, these indices are of very limited value in an analysis of racial type. It can be safely assumed, however, that the type of skull deformation with which we are dealing here would in most cases result in increasing the cranial index from what it would have been in the natural state. This conclusion is based upon the following observations:

Cranial length was more greatly affected by the deformation than any of the other dimensions. It was reduced more in some skulls than in others, depending upon the extent of the deformation as well as the area in which the flattening occurred. The majority of the skulls exhibit the greatest amount of depression in the median posterior area of the parietals, with the occiput relatively less affected. An example can be seen in the profile view of Burial 28 (Pl. 11). However, in others (as can be observed in the profile view of Burial 31; Pl. 12), the flattened area included also the adjacent portion of the occiput, which resulted in an even greater reduction in cranial length.

Compensatory distortions of other vault proportions can be expected when the occiput has been compressed, and one that is readily recognizable on most of the crania is a lateral bulging of the upper portions of both parietals. Although there is usually no obvious distortion in the parietal area above the squamous suture (where maximum breadth usually falls), it is not likely that this area could have been completely unaffected. As a result, the breadth measurement of many of the crania may have been greater than would have been the case if the natural growth of the vault had not been interfered with.

A striking feature of these skulls is the consistently great vault heights. The basio-bregmatic height measurements range from 139 to 154. Since elevation of vault height can be a compensatory skull growth reaction of some types of artificial cranial deformation, it might be assumed that therein lies the explanation of these unusually high vaults. However, based on observation, as well as a comparison with the apparently undeformed cranium of Burial 72, the impression is gained that the high vaults are a biological characteristic. The sagittal ridging, which has been described, has contributed to these vault heights.

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## CATALOGUE DATA FOR CERTAIN ILLUSTRATIONS

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10. Young adult male skull, Burial 72, Group E, Mound C (99.1-2120)
11. Old adult male skull, Burial 28, Group F, Mound C (99.1-2122)
12. Child's skull, Burial 31, Group F, Mound C (99.1-2121)

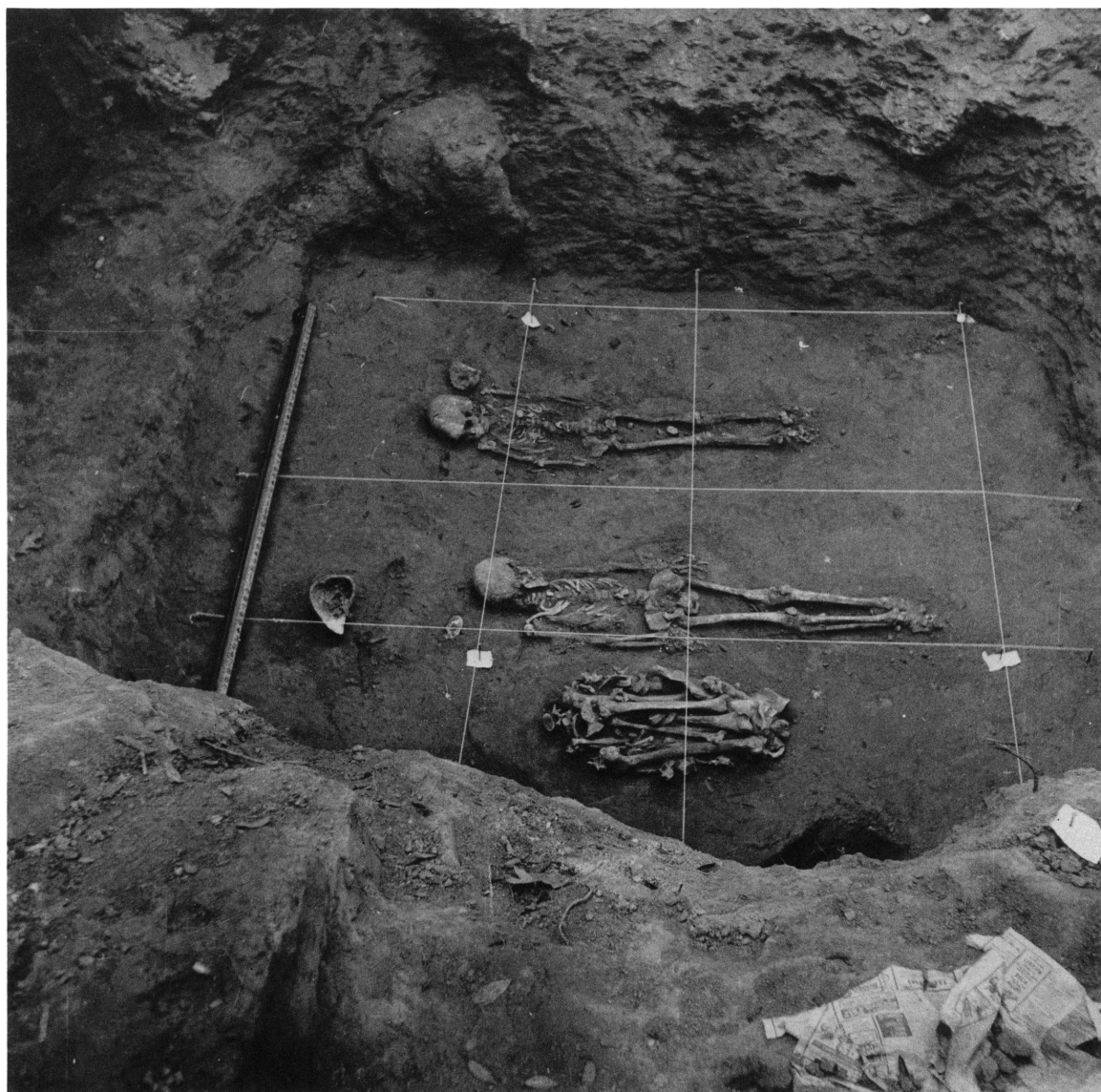
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  - g. 20.2-6682
  - h-j. 20.2-6676
  - k. 20.2-6678
  - l. 20.2-6683
  - m-n. 20.2-6687
  - o. 20.2-6685
  - p. 20.2-6689
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37. Cache of lamellar blades
  - a-d. 20.2-6716





Excavation of Mound C, Helena Crossing Site. The crew is in the process of cutting the North 45-foot profile. Tomb D on the south side of the mound is being cleared



Burials on the floor of Tomb B, Mound C. The small pieces of white paper mark stake positions. A portion of the tomb walls which slumped when the roof timbers collapsed can be seen near the left-hand corner. (See Fig. 12)





Oval pit beneath floor of Tomb B. The wooden frame that lay on the floor of this pit can be seen. (See also Fig. 13)

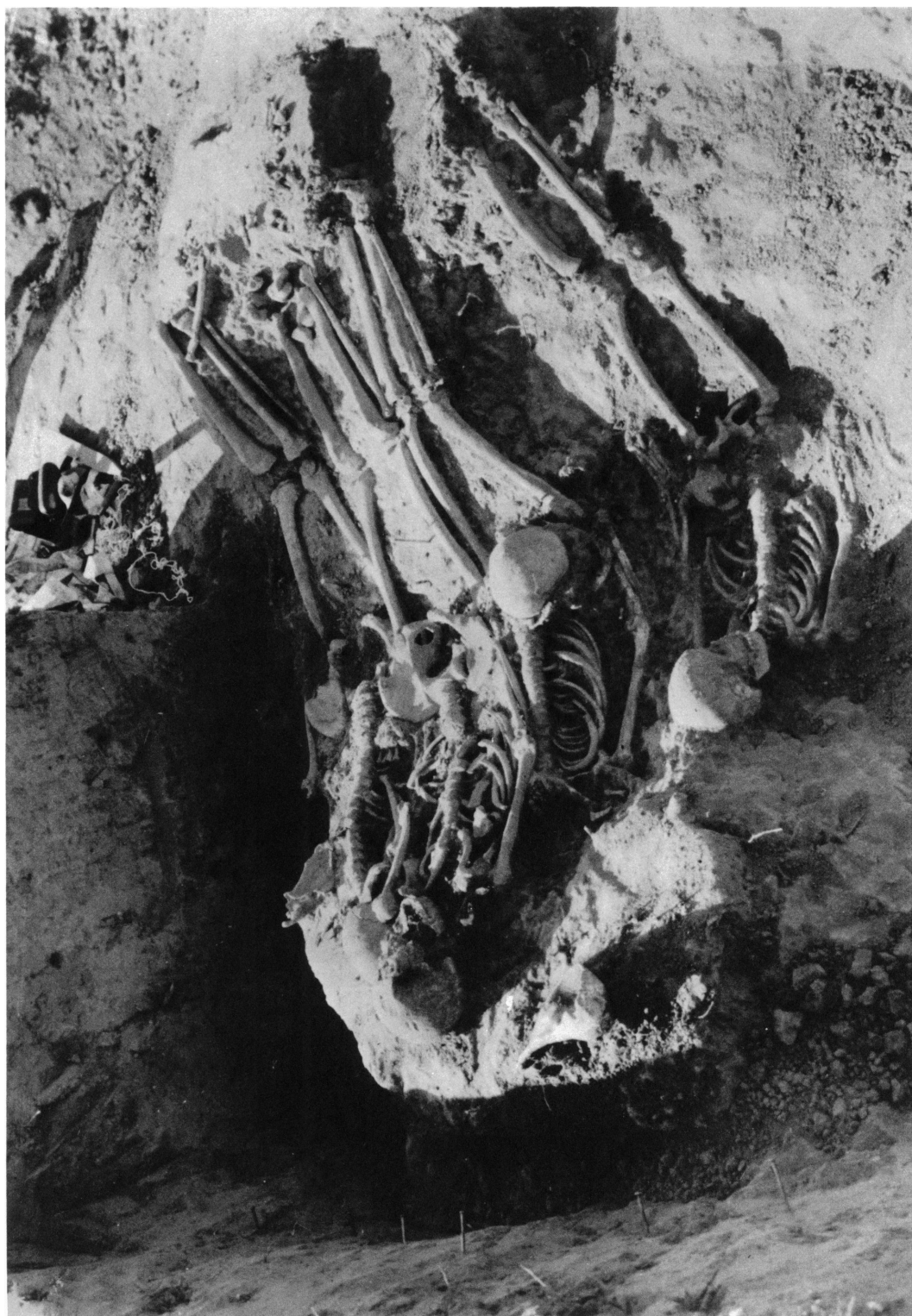


A



B

- a. Burials on the floor of Tomb E, Mound C. Note copper staff ferrule lying on bundle burial. (See Fig. 20.)  
b. Detail of Burial 67, Tomb E. Copper staff ferrule apparently was packaged with the bones

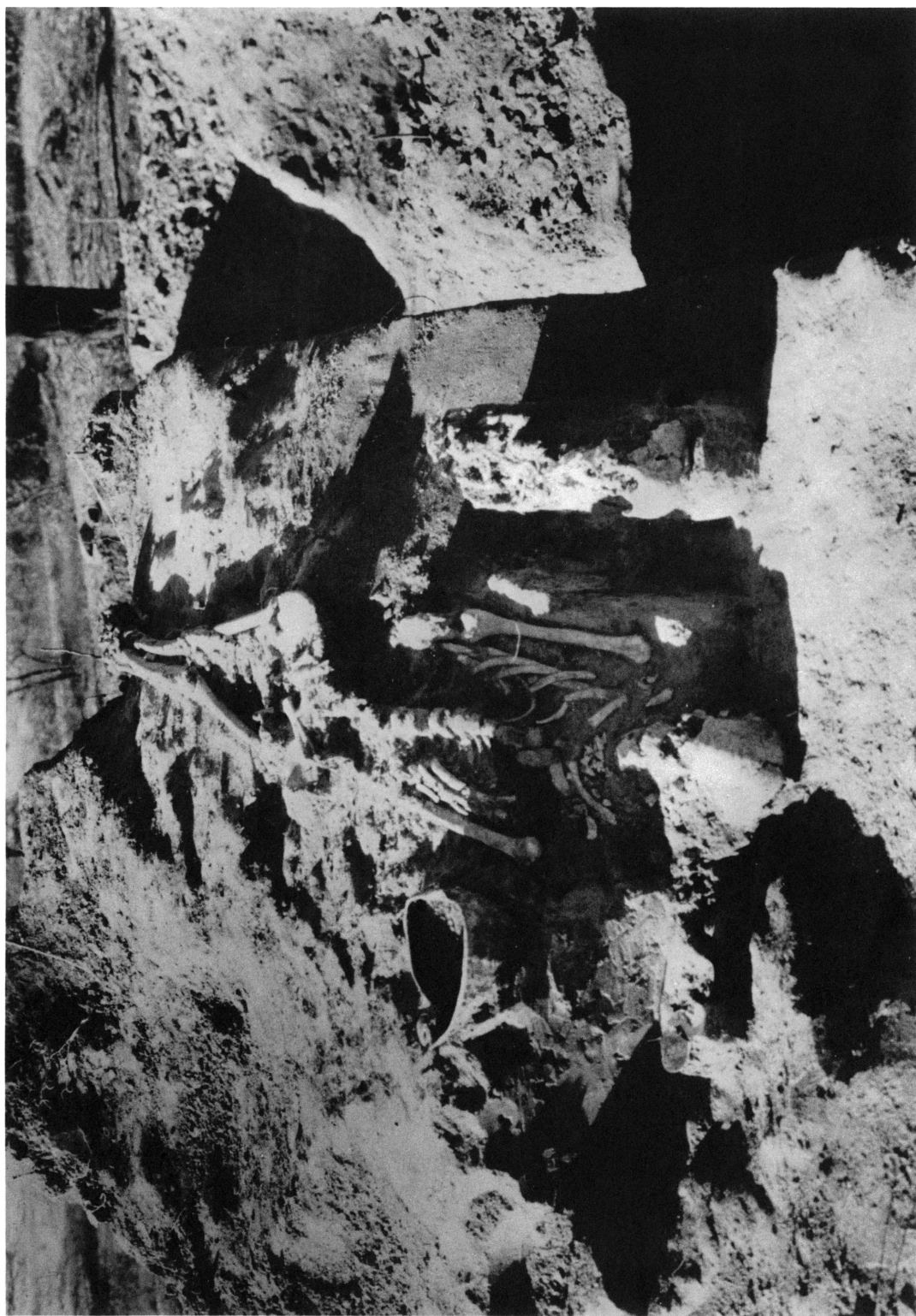


Burial Group F, Mound C. These skeletons have been displaced owing to the collapse of the roof of Tomb C which was beneath them.  
(See Fig. 22)



Skeletons of Burial Group H, Mound C. Lower parts of legs of these skeletons were displaced by collapse of the roof of Tomb E. (See Fig. 24)

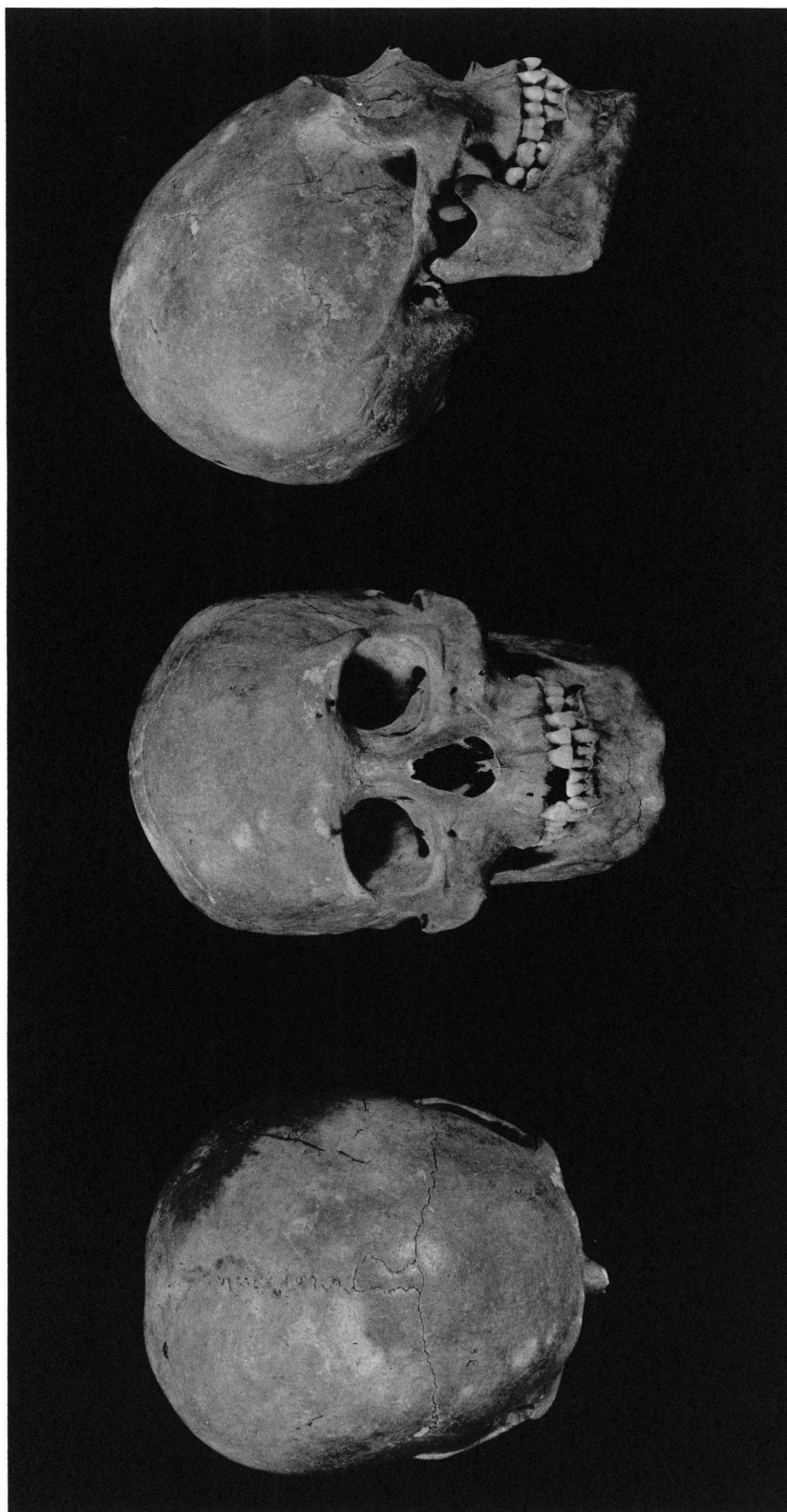




Burial Group I, Mound C. Note conch shell dipper. The upper part of this burial has been affected by the collapse of Tomb C. (See Fig. 26)



The tomb in Mound B, Helena Crossing Site. The impressions of the large logs that ran along the sides of the pit can be seen. The roofing logs ran at right angles to these and impressions can be seen on the right and left of the pit. (See Fig. 36)



Young adult male skull, Burial 34, Burial Group G, Mound C





Young adult male skull, Burial 72, Burial Group E, Mound C



Old adult male skull, Burial 28, Burial Group F, Mound C



Child's skull, Burial 31, Burial Group F, Mound C







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PART 1. Hopewell Culture Burial Mounds near Helena, Arkansas. By James A. Ford. Pages 1-56, 12 plates, 38 text figures, 5 tables. 1963. Price, \$1.75.