GEOLOGICAL SURVEY OF ALABAMA
WALTER B. JONES, STATE GEOLOGIST (ON LEAVE)

MUSEUM PAPER 15
ALABAMA MUSEUM OF NATURAL HISTORY

ANTHROPOLOGICAL STUDIES AT MOUNDVILLE

PART 1

INDIAN SKELETONS FROM THE MUSEUM BURIALS AT MOUNDVILLE[a]

PART 2

POSSIBLE EVIDENCE OF SCALPING AT MOUNDVILLE[a]

BY
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[a]Presented at the meeting of the Alabama Academy of Science at Birmingham-Southern College, March 29-30, 1940.

UNIVERSITY, ALABAMA
1941

WETUMPKA PRINTING CO.
Printers and Publishers
Wetumpka, Ala.
1942

LETTER OF TRANSMITTAL

University, Alabama

September 25, 1940

Honorable Frank M. Dixon,

Governor of Alabama,

Montgomery, Alabama.

Sir:

I have the honor to transmit herewith the manuscript of a report entitled "Anthropological Studies at Moundville, Part 1: Indian Skeletons from the Museum Burials at Moundville, and Part 2: Possible Evidence of Scalping at Moundville," by Charles E. Snow. It is requested that this be printed as Museum Paper 15 of the Geological Survey of Alabama.

Respectfully,

STEWART J. LLOYD,

Asst. State Geologist.

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Part 1

Indian Skeletons From The Museum Burials At Moundville

INDIAN SKELETONS FROM THE MUSEUM BURIALS AT MOUNDVILLE

ACKNOWLEDGEMENTS

I wish hereby to acknowledge my indebtedness to those individuals who helped to make possible the preparation of this paper. I am very grateful to Dr. Walter B. Jones, Director of the Alabama Museum of Natural History; and to Mr. David L. DeJarnette, Curator of the Alabama Museum of Natural History for their kindnesses in providing me with the opportunity of measuring and observing the Museum burials at Moundville. I am obliged to Mr. Harold F. Dahms, Chief Laboratory Archaeologist and Mr. Marshall T. Newman of Harvard University who, as my colleagues at the Archaeological Laboratory, have made many helpful suggestions and constructive criticisms of the manuscript. I am deeply indebted to George S. Graham, M.D., of Birmingham, for his able diagnoses of the pathological specimens. I am obligated to the Work Projects Administration for the facilities and personnel employed in the preparation of the photographs as well as the manuscript itself.

INTRODUCTION

Probably no prehistoric Indian site in Alabama has created as much interest and at the same time holds such an important place in southeastern archaeology as Moundville. This extensive site, with its interesting grouping of small and large flat-topped pyramidal mounds, is on a bend of the Black Warrior River, and lies partially in Tuscaloosa and partially in Hale counties, in the northwestern part of central Alabama. The museum burials at Mound State Monument form a prominent feature of the Museum building which was erected over the burial areas inclosed within the north-south wings of the Museum. The burials in both areas, varying in depth from one to four feet, are in most cases placed on the back in either extended or partially flexed positions and are usually accompanied by an abundance of burial offerings consisting of shell-tempered pottery vessels, stone discs, shell beads and gorgets, and in a few cases, copper objects. This sample of the

aboriginal population belongs to a group placed tentatively by Cole and Deuel[1] with Middle Mississippi phase regarded as prehistoric since no indications of White contact material are in evidence. Fifty-five Indian burials are exposed to view and for the first time a detailed description of the physical types of the people who lived at Moundville and contributed to the great culture centered there, is possible. The cranial and post-cranial measurements of the individual skeletons and the subsequent statistical computations are included at the end of this paper.

ANALYSIS

Fifteen restored adult Indian crania (seven males; eight females), compose the series presented in this paper. These crania have been measured and observed by the writer using the standard craniometric instruments and techniques. Additional infantile and juvenile crania are sufficiently preserved to illustrate the physical types which were present among the younger set of the population. Specimens which present pathological conditions are considered apart and described later.

CRANIA

The Moundville series is made up of seven male and eight female skulls. This grouping may be made since these specimens can be regarded as a sample of the adult population coming from one cultural horizon. On the basis of head form alone two distinctive types can be discerned among both male and female skulls. Accordingly, a second division was carried out segregating the two different physical types. The difference between these two groups is statistically verified by the means of the measurements. The measurements and indices of each skull as well as the averages of these data, are included at the end. Figures inclosed within parentheses represent approximate measurements where contacts are poor or skulls fragmentary or warped.

Thirty-two measurements of the crania and eighteen indices derived from these measurements have been selected to describe

[1]Cole, F. C. and Deuel, T., *Rediscovering Illinois*. University of Chicago Press, March, 1937, p. 216.

the physical types and to demonstrate their similarities with other well established series of nearby areas. The typical and preponderant physical type (called "K.I.")[2] among the Moundvillians may be described as having the following average cranial characteristics: the crania of both the males and females are fairly large, high and broad giving a round-headed form to the skull when viewed from above. (See Figures 1 and 2.) Cranial deformation was intentionally practiced and the back of the skull is usually flat (vertical occipital deformation) (Figures 4 and 6) while in some cases even the frontal area of the skull has been flattened. (Figures 6 and 7) Foreheads are of medium width, narrower among the females when compared with their skull breadths. Faces are very large and of short to medium lengths. Orbits are medium sized. The nasal apertures of the males are of medium proportions while those of the females are broad. (Compare Figure 4 with Figure 8) The typical Moundvillian profile exhibits the following characteristics: The cranial vault is well rounded, often flattened posteriorly, high at the vertex with a fairly well rounded frontal area which is artificially flattened in some individuals. The nose is concavo-convex in profile and is less prominent in females than in males. (Figure 4) The palate is broad and the chin is massive though receding. (Figure 3) In short, the crania are often deformed and are brachycranic and hypsicranic, with the males acrocranic, and the females metriocranic. The faces of the males are mesoprosopic, the females euryprosopic. The orbits of both males and females are mesoconch. The nasal proportions of the males are mesorrhine, the females chamaerrhine. Alveolar prognathism is medium to pronounced in both sexes. The palates brachyyuranic.

[2]"K.I." is an abbreviation for Koger's Island, the type site of the round-headed physical type associated with shell tempered pottery. The site is prehistoric. The term "Koger Island" is used in "Preliminary Report on the Skeletal Material from Pickwick Basin, Alabama" by Newman, Marshall T., and Snow, Charles E. included as a section in *An Archaeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee. B.A.E. Bull. No.* 129, by Webb, William S. and DeJarnette, David L. in press.

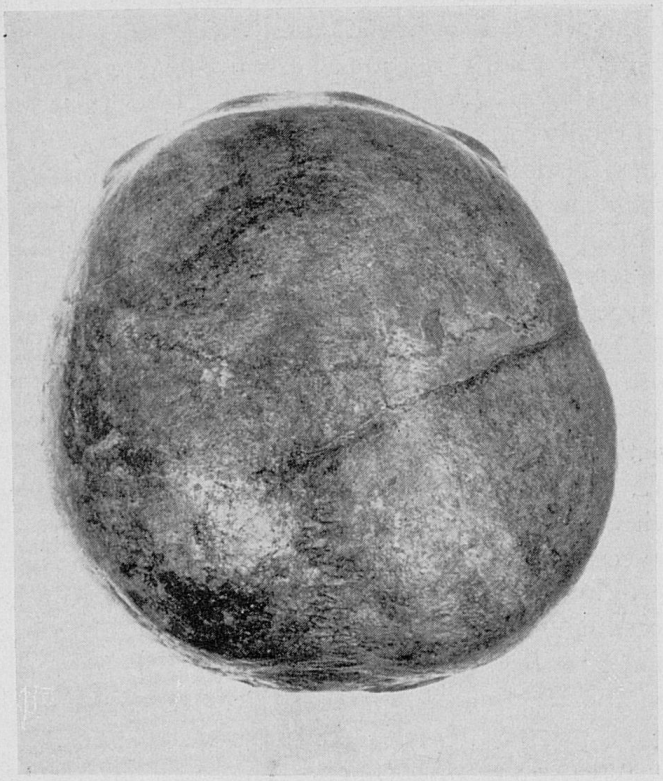

FIGURE 1. Norma verticalis of male cranium No. M-2174 showing typical round-headed form. Note the slight flattening at the back (lower edge) of skull.

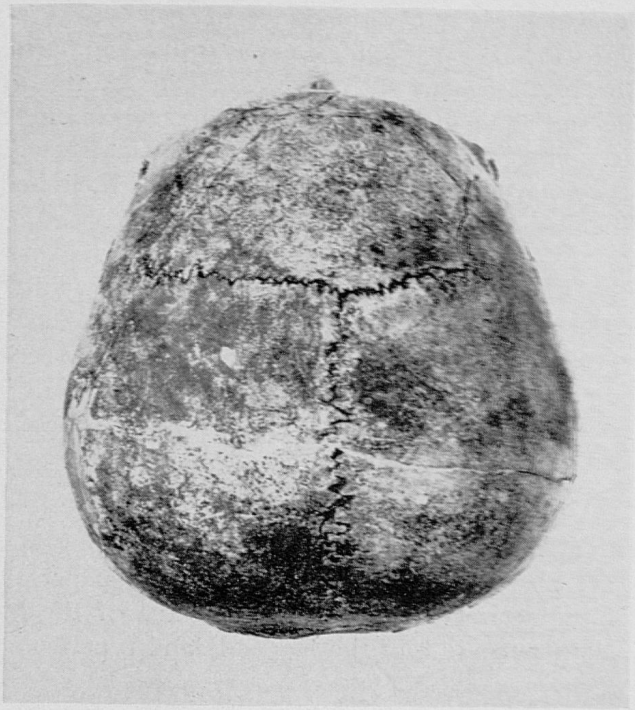

FIGURE 2. Norma verticalis of (female ?) cranium No. M-2547, showing typical head form altered by more intensive occipital deformation.

A few members of the population, however, have long narrow skull vaults which are undeformed, and called elsewhere the Shell Mound type. ("SM")[3]. Their skull lengths signifantly exceed those of the round-headed individuals. Skulls of this type, both the juvenile and adult of both sexes, are present among burials at Moundville. The two adults (one male, one female) which represent this type, have large broad faces hafted to their long narrow skull vaults.

In order to approximate the averages of the vault diameters of the undeformed round-headed group, those skulls having a marked degree of deformation were excluded from the series. These means along with the combined group are to be found in Tables III & IV.

POST-CRANIAL SKELETON

Measurements and indices of the individual long bones of the skeletons are also included at the end of this paper. Although the size of the series is not large, the means of the Moundville series are similar to those of the Koger Island type from Pickwick Basin.

Generally speaking, the long bones of the Museum Moundvillians are characterized by medium to large size coupled with pronounced muscular attachments and robusticity. Stature calculations computed from Karl Pearson's formulae[4] indicate an average stature for the males of 165.0 cms., or 65 inches; and 155.7 cms., or 61 inches for the females.

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[3]"SM", an abbreviation of Shell Mound refers to the undeformed long-headed physical types which are found abundantly in shell middens on the Tennessee River. These types constitute the earliest known inhabitants of the north Alabama area. See footnote on page 9.

[4]Pearson, K., "On the Reconstruction of Stature of Prehistoric Races", *Philosophical Transactions of the Royal Society Series A, CXCII,* London, 1898, pp. 169-244.

Formula I Males $71.272+1.159x(F.+T.)$ cms.
Formula II $71.443+1.22F.+1.09T$ cms.
Females $69.154+1.126(F.+T.)$ cms.

COMPARATIVE TABLE OF STATURE CALCULATIONS

	Males		*Females*	
	Moundville	$Lu^{v}92$ K.I.	Moundville	$Lu^{v}92$ K.I.
	(5)	(18)	(6)	(9)
Formula I	164.7 cms.	167.3 cms.	155.7 cms.	153.0 cms.
	(5)			
Formula II	165.0 cms.			

The muscular areas of the massive bones indicate a well muscled medium-sized adult population.

Definite cultural affinities have been demonstrated between Moundville artifacts (pottery, decorative motifs, projectile points, the use of shell ornaments, types of house structures, et cetera) and the late cultural levels of many sites along the Tennessee River, particularly in the Pickwick Basin. Naturally then, it follows that a comparison of the physical types from similar cultural horizons of the two areas is in order. The round-headed individuals from Moundville appear to be closely allied with the Koger Island types in the Pickwick Basin area. The measurements of the Moundville crania and those of a Tennessee Stone Grave series reported by Hrdlicka are quite similar. The few long-headed Moundville skulls resemble very closely the Shell Mound Physical Type of the Pickwick Basin series. The Pickwick Basin report[5] demonstrates conclusively the relatively greater age of long-headed Shell Mound type underlying the later round-headed type in that area. On that evidence then, the problem of these physical types may be stated as follows: it may be that the preponderant round-headed physical type intermixed with the earlier long-headed inhabitants of the area and thus long-headed strains were introduced into the otherwise pure round-headed stock. If so, the long-headed crania which have been treated apart may be regarded as the products of recombination of genetic strains from older long-headed peoples who may have co-existed for a time with the round-headed invaders and, as demonstrated by the pit burials at Moundville, were buried in close proximity. With the present data at hand,

[5] *An Archaeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee.* B.A.E. Bul. No. 129, by Webb, William S. and DeJarnette, David L. in press.

however, there are no positive indications to suggest that admixture took place, although theoretically one might speculate upon the interactions of two different peoples suddenly brought together in the same area. If mixture is not demonstrable, then it becomes possible, but not probable, that the two types lived at, or at least are found at Moundville together without mixing, although human history over the earth does not bear out this suggestion. Or, it may be possible that since Moundville was an important center of prehistoric Indian culture, travelers coming from different tribes may have visited this ancient Indian town for religious and ceremonial purposes and perhaps died there. However that may be, it seems demonstrated by the Museum pit burials that two physical types lived and died together at Moundville. No social discrimination seems to have been made between the physical types if one may judge on the basis of grave offerings accompanying the burials.

Mixture of the two physical types present in the Pickwick Basin series was not demonstrated in the Pickwick Basin report now on press, but it is demonstrated that two different physical types are to be found in the aboriginal population of Moundville and probably contributed as one to the formation and accumulation of the characteristic culture present at Moundville.

PATHOLOGY

One-third to one-half of the adult sample were afflicted with hypertrophic arthritis in the lumbar region and some showed evidence of the same affliction of other parts of the skeleton. The most interesting specimen is the skull of a female with a pathological groove which encircles the cranial vault at the approximate hair line and suggests the possibility of scalping[6]. Dental caries are present to a slight degree—even in the deciduous or baby teeth of infants.

[6]*Possible Evidence of Scalping at Moundville*: Part 2.

SUMMARY

To summarize the data presented in this paper it can be said, judging from the sample of the population available in the Museum burial pits, that nearly eighty-five per cent of the Moundvillians have round skulls characteristically deformed either at the back of the skull alone or the front of the skull or by a combination of both. There was also present, although in smaller numbers, a racial group which is characterized by undeformed long-headed skulls and which may possibly be considered the result of admixture between the earlier long-headed Shell Mound type of the area and the later incoming round-headed stock which seems to have spread in great numbers over the area of the southeast penetrating as far east as the Florida coasts. Additional data and specimens alone can help to elucidate this problem.

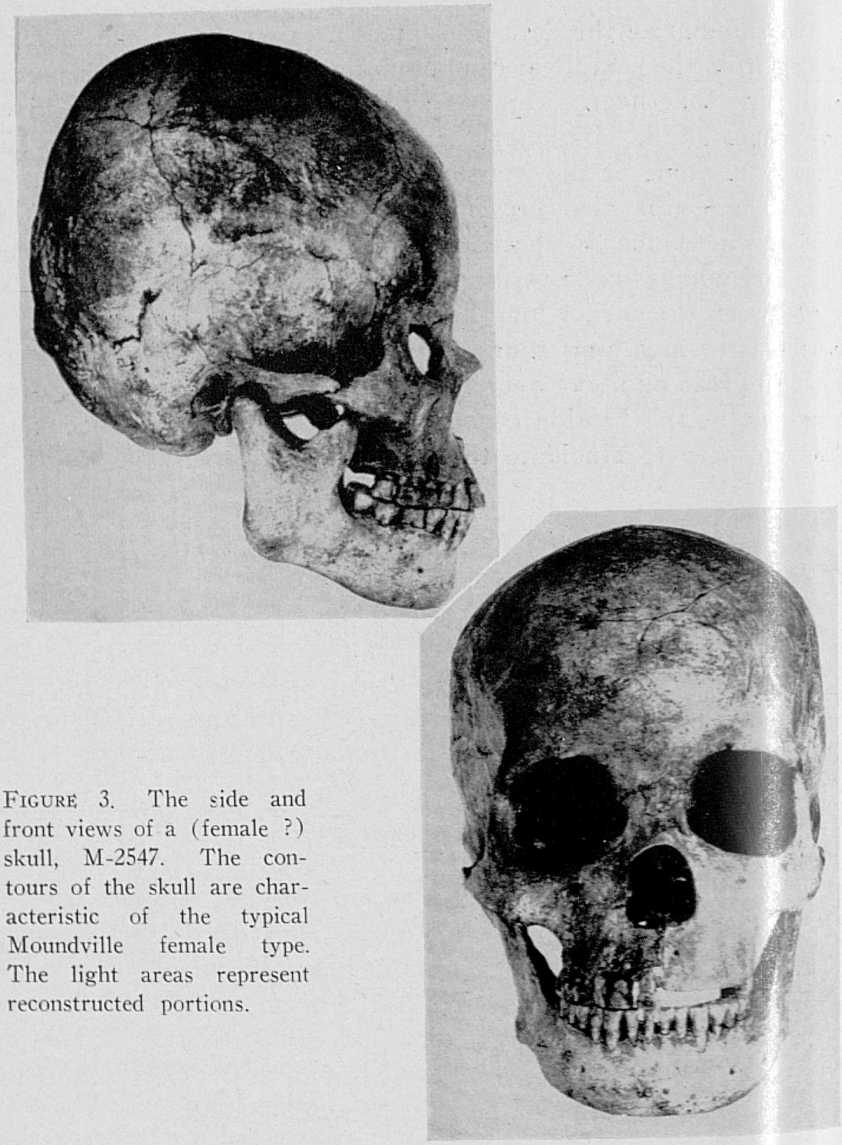

FIGURE 3. The side and front views of a (female ?) skull, M-2547. The contours of the skull are characteristic of the typical Moundville female type. The light areas represent reconstructed portions.

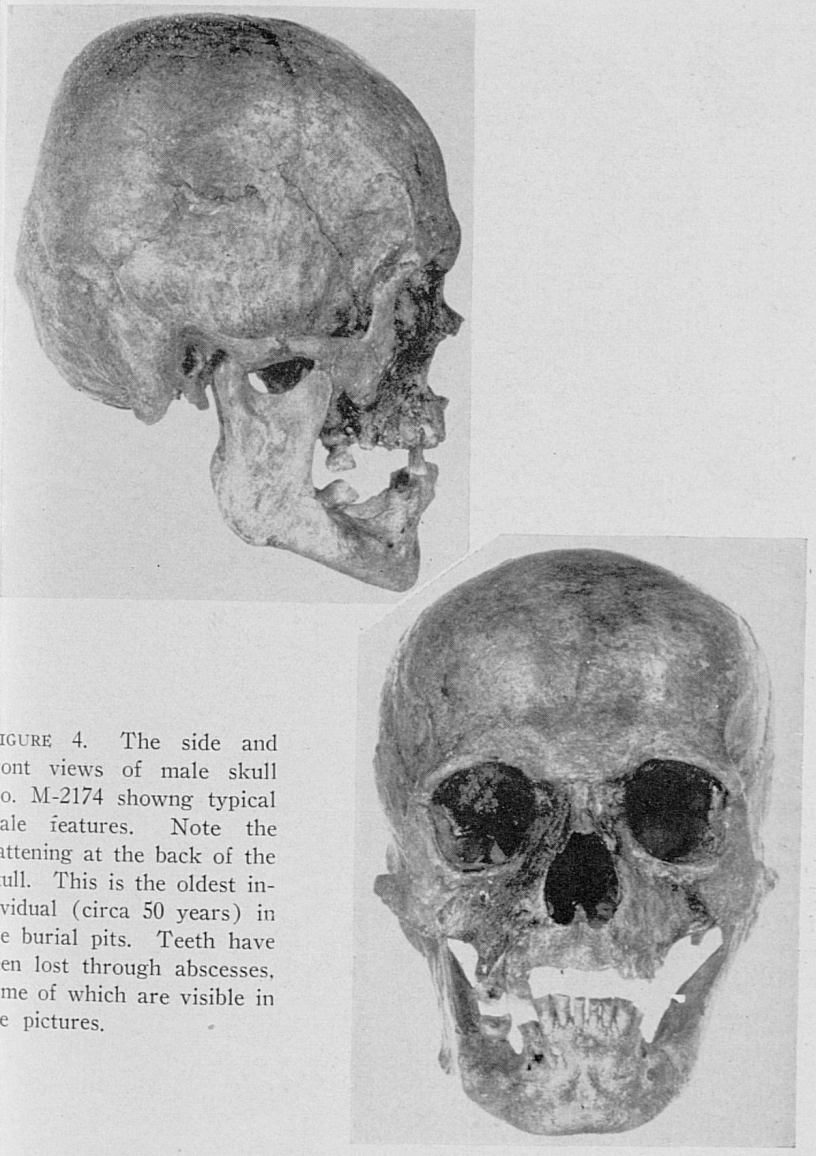

FIGURE 4. The side and front views of male skull No. M-2174 showng typical male features. Note the flattening at the back of the skull. This is the oldest individual (circa 50 years) in the burial pits. Teeth have been lost through abscesses, some of which are visible in the pictures.

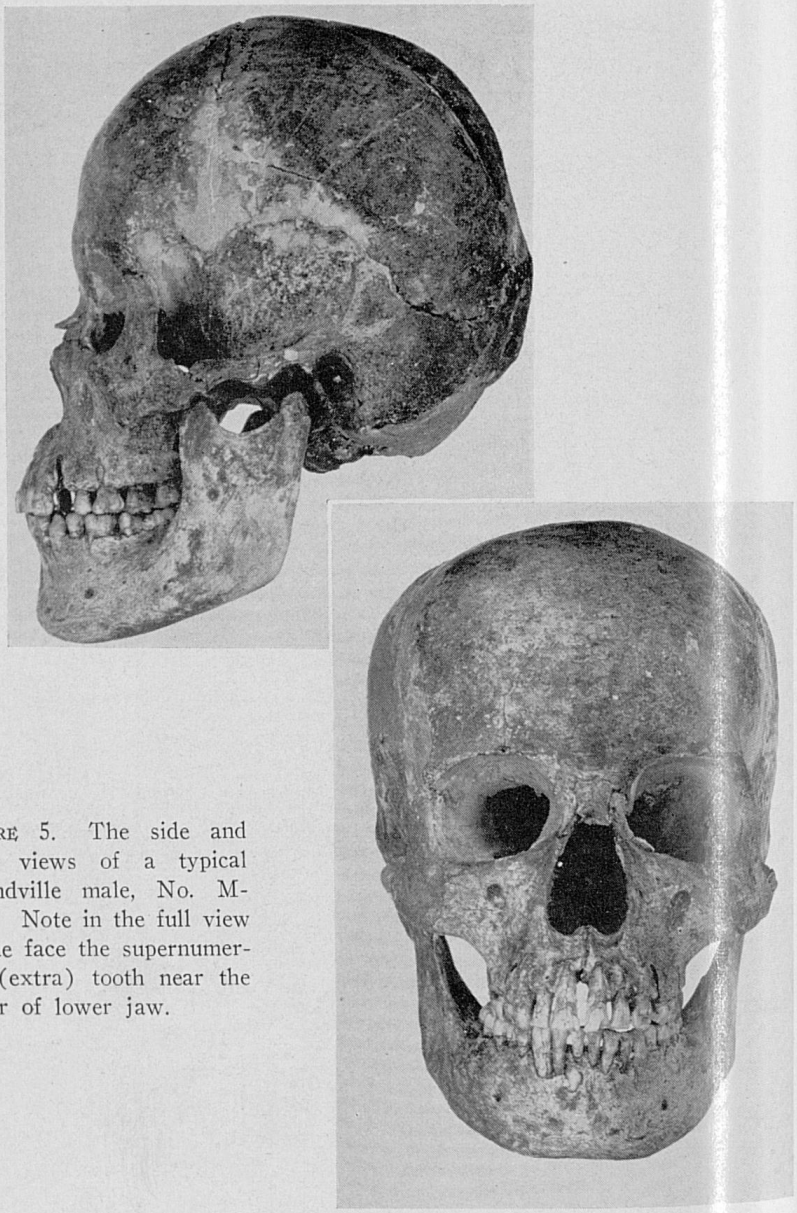

FIGURE 5. The side and front views of a typical Moundville male, No. M-2529. Note in the full view of the face the supernumerary (extra) tooth near the center of lower jaw.

FIGURE 6.
front view
No. M-268
tentional f
forehead as
the skull.

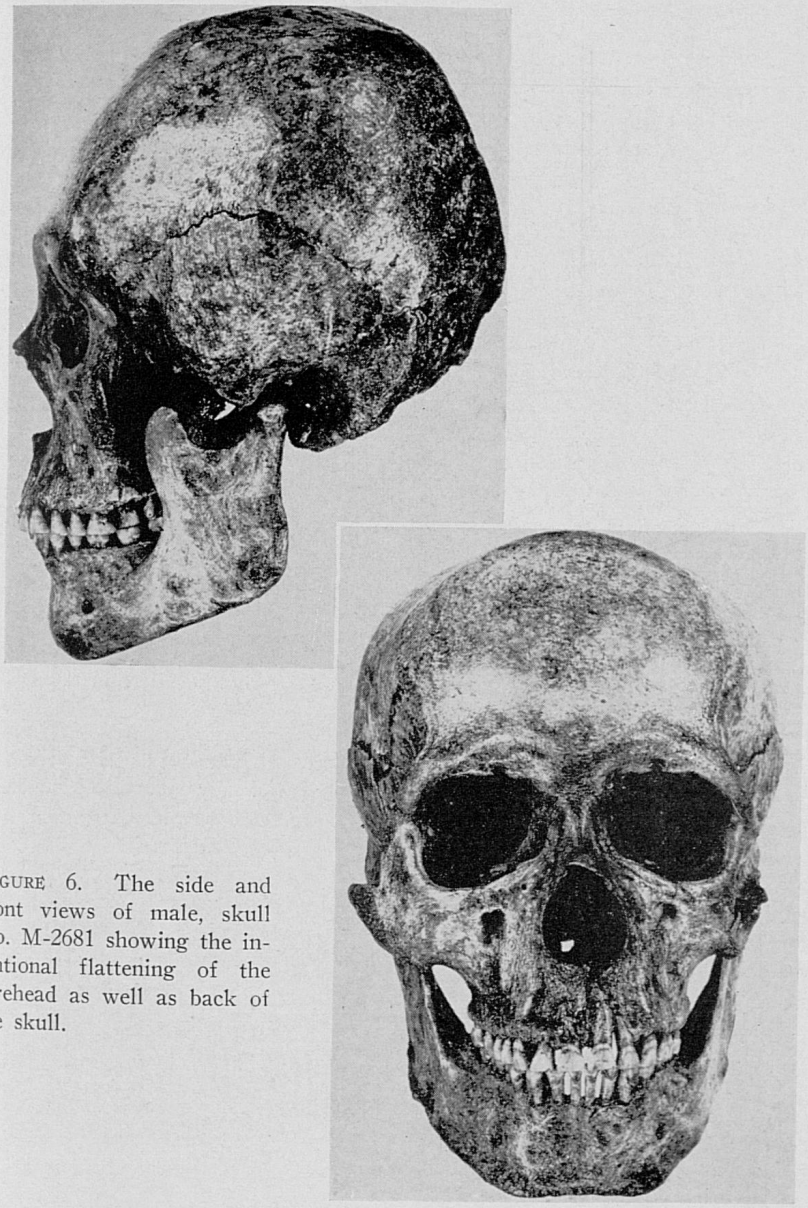

FIGURE 6. The side and front views of male, skull No. M-2681 showing the intentional flattening of the forehead as well as back of the skull.

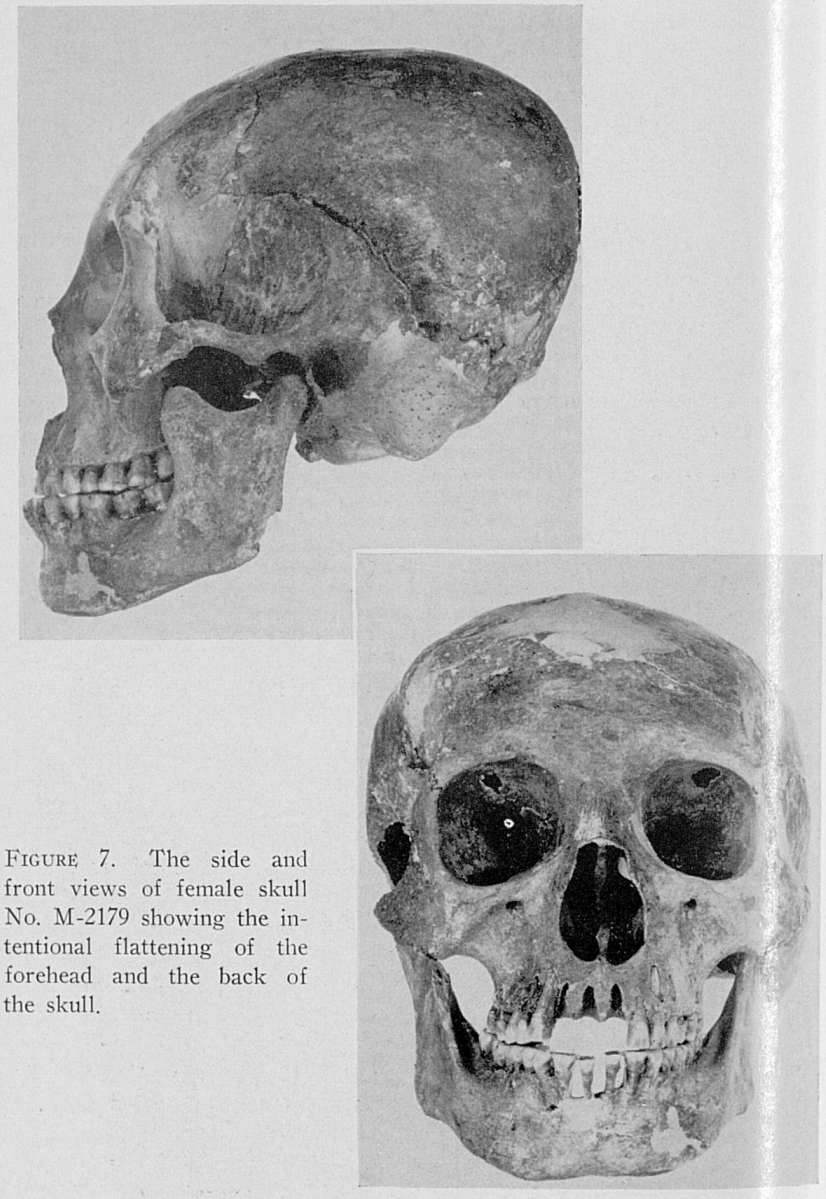

FIGURE 7. The side and front views of female skull No. M-2179 showing the intentional flattening of the forehead and the back of the skull.

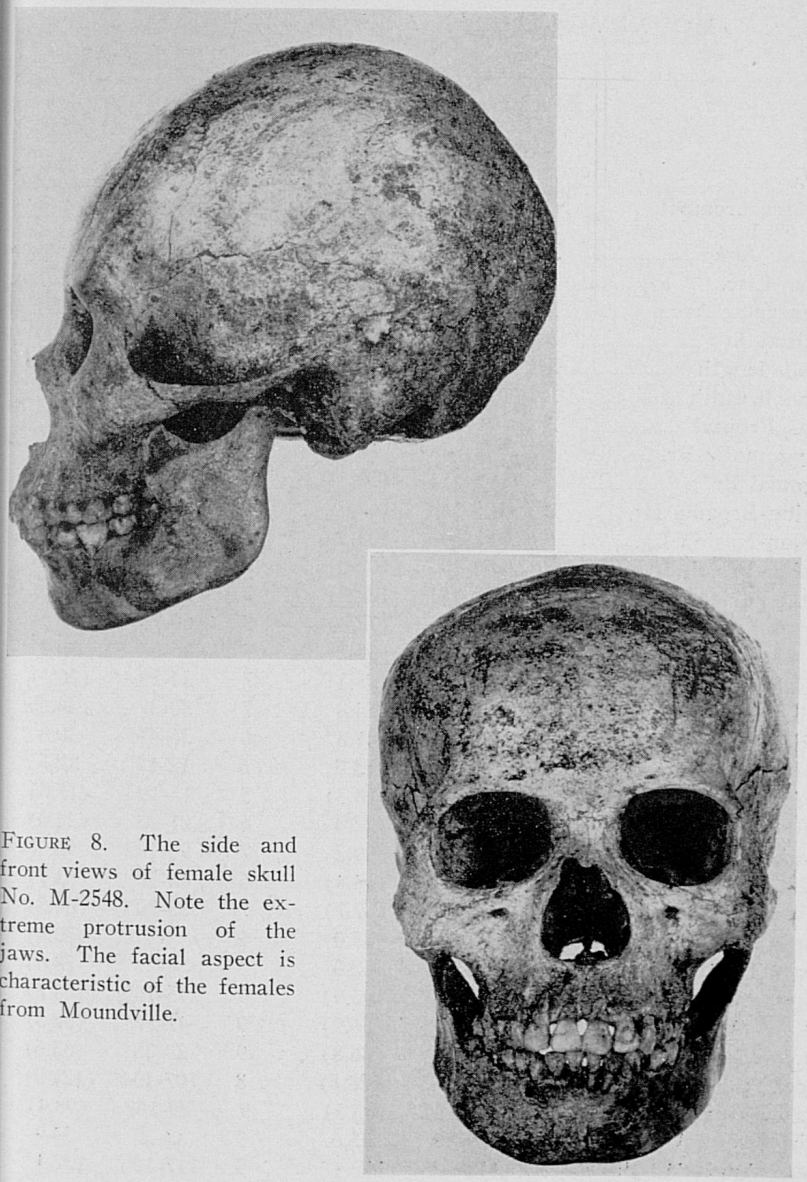

FIGURE 8. The side and front views of female skull No. M-2548. Note the extreme protrusion of the jaws. The facial aspect is characteristic of the females from Moundville.

TABLE I

MOUNDVILLE CRANIA FROM PIT BURIALS

Measurements in Millimeters

	Males			*Females*		
Measurement	No.	Range	Mean	No.	Range	Mean
Age	7	23-50	32.6 years	7	21-26	23.0 years
Max. Circ.	5	494-520	505.7 mm.	7	482-510	495.9 mm.
Transverse Arc	5	327-344	335.2	7	301-333	(314.9)
Sagittal Arc	5	340-385	(357.1)	7	310-370	(350.2)
Head length	5	155-185	167.9	7	152-174	165.8
Head breadth	7	140-155	(149.4)	7	140-151	(145.8)
Min. Frontal	7	91-103	(97.6)	7	87-100	92.4
Bizygomatic Br.	5	138-148	(143.6)	7	131-139	(137.0)
Bigonial Br.	6	95-114	(105.2)	7	89-106	99.1
Basion-Bregma Ht.	3	145-148	147.0	5	129-149	139.5
Basion-Nasion Lg.	3	97-107	103.3	5	95-108	101.0
Basion-Prosthion Lg.	3	100-103	(102.0)	5	91-106	(100.4)
Total Facial Ht.	6	118-131	(122.8)	7	110-119	113.9
Upper Facial Ht.	5	65-80	(72.4)	7	66-73	(70.3)
Nasal Height	5	48-55	51.2	7	46-56	50.0
Nasal Breadth	7	23-28	(25.3)	7	24-29	(26.1)
Orbital Ht. Left	4	34-36	34.8	7	30-37	(34.6)
Orbital Br. Left*	4	40-43	41.8	6	36-41	39.8
Nasalia-upper	3	11-16	13.0	6	12-13	12.5
Nasalia-lower	3	18-19	(18.3)	5	15-19	(17.3)
Interorbital Brd.	4	19-24	22.0	6	21-23	(22.0)
Biorbital Brd.	5	93-104	99.2	7	96-102	98.9
Palate-External Length	7	49-58	(54.4)	6	46-58	(53.7)
Palate-External Breadth	7	63-74	(67.7)	7	55-70	(64.3)
Foramen Magnum Lg.	1	-	35.0	1	-	(33.0)
Foramen Magnum Br.	1	-	32.0	1	-	28.0
Condylo-Sym. Lg.	7	98-111	(105.9)	9	95-109	(100.7)
Ht. of As. Ramus	7	50-64	(56.9)	9	47-57	(52.3)
Ht. of Symphysis	6	34-40	(36.8)	9	29-38	(33.6)
Bicondylar Br.	6	124-135	(128.2)	8	107-131	(121.9)
Bigonial Br.	6	96-114	(105.5)	9	89-107	(98.4)
Min. Brd. of As. Ramus	7	29-39	35.6	9	33-38	34.9
Mean Angle-Mandible	7	113-125°	119.4°	9	117-126°	122.4°

*(Maxillo-frontale)

TABLE II

MOUNDVILLE CRANIA FROM PIT BURIALS

Indices

Index	*Males* No.	Range	Mean	*Females* No.	Range	Mean
Cranial	5	76-98	88.9	7	81-99	(88.4)
Length Height	3	84-93	89.3	5	78-90	84.4
Breadth Height	3	95-99	97.0	5	86-106	(95.7)
Cranial Module	3	151-158	154.3	5	144-156	(150.0)
Fronto-Parietal	7	63-69	(65.4)	7	59-66	(63.4)
Zygo-Frontal	5	62-72	(67.6)	7	64-72	(68.3)
Fronto-Gonial	5	97-119	(107.5)	7	100-119	107.4
Zygo-Gonial	5	66-78	(72.4)	7	65-78	(73.4)
Cranio-Facial	5	91-105	(97.5)	7	90-96	(92.6)
Left Orbital	4	79-86	83.2	6	85-90	(88.7)
Facial	5	80-88	(85.2)	7	81-87	(84.3)
Upper Facial	4	45-54	(50.2)	7	50-54	(52.0)
Nasal	5	45-50	(48.0)	7	45-63	(52.9)
Nasalia Transverse	3	61-84	(69.8)	5	67-87	(73.1)
Interorbital	3	19-23	21.3	6	21-23	(22.2)
External Palatal	7	112-134	(124.8)	6	116-137	(123.2)
Mandibular	6	76-87	(82.0)	8	77-89	(82.8)
Foramen Magnum	1	-	91.4	1	-	(84.8)

COMPARATIVE TABLE III

MALES

Measurement	Moundville (K.I.) No.	Range	Mean	Pickwick (Total K.I.) No.	Mean	Tenn. Stone[7] Grave (Hrdlicka) No.	Mean	Moundville (S.M.) No.	Mean	Pickwick (S.M.) No.	Mean
Max. Circumference	4	494-517	502.0 mm.	16	507.2 mm.	----	------	1	520.0 mm.	45	506.0 mm.
Transverse Arc	4	327-344	336.5	8	326.6*	----	------	1	330.0	21	310.6
Sagittal Arc	3	343-373	353.5	8	359.2*	----	------	1	385.0	14	371.5
Head Length	2	162-176	169.0	20	174.0	21	167.0 mm.	1	185.0	54	183.4
Head Breadth	3	147-155	150.7	20	145.4	21	146.0	1	140.0	55	134.2
Min. Frontal	3	98-103	100.3	36	95.7	----	------	1	91.0	54	93.4
Bizygomatic Breadth	4	138-148	(142.8)	19	142.2	----	139.0	1	147.0	21	140.8
Bigonial Breadth	3	95-110	103.3	18	107.6	----	------	1	100.0	18	102.6
Basion-Bregma Height	1	-	148.0	25	143.5	----	142.0	----	------	----	------
Basion-Nasion Length	3	97-107	103.3	23	104.5	----	------	----	------	----	------
Basion-Prosthion	3	100-103	(102.0)	18	98.8	----	------	----	------	----	------
Total Facial Height	4	119-131	124.5	8	125.5	----	121.0	1	(118.0)	13	119.2
Upper Facial Height	2	74-80	77.0	22	73.0	----	74.0	----	------	----	------
Nasal Height	5	48-55	51.2	26	52.7	----	52.0	----	------	----	------
Nasal Breadth	4	23-27	25.2	22	25.8	----	26.0	1	28.0	34	25.5
Orbital Ht. L.	4	34-36	34.8	14	35.4*	----	------	----	------	----	------
Orbital Brd. L.	4	40-43	41.8	7	41.0*	----	------	----	------	----	------
Palate-Ext. Length	3	53-58	55.0	14	54.7*	----	------	1	(55.0)	11	52.8
Palate-Ext. Breadth	5	63-74	67.2	12	69.1*	----	------	1	74.0	9	63.0
Condylo-Sym. L.	5	98-109	104.0	21	104.3*	----	------	1	110.0	19	98.8
Ht. of Symphys.	3	37-40	38.0	17	36.9*	----	------	1	(36.0)	10	34.2
Bicondylar	3	128-135	130.7	18	130.3*	----	------	1	126.0	14	125.6
Bigonial	3	96-110	103.7	18	107.6*	----	------	1	100.0	18	102.6
M. Br. of As. Ramus	6	29-39	35.2	25	35.1*	----	------	1	38.0	21	33.9
Mn. Ang. Mandible	6	113°-125°	118.7°	20	114.8°*	----	------	1	124.0°	20	117.6°

Palate-Ext. Breadth	5	63-74	67.2	12	69.1*	----	------	1	74.0	9	63.0
Condylo-Sym. L.	5	98-109	104.0	21	104.3*	----	------	1	110.0	19	98.8
Ht. of Symphys.	3	37-40	38.0	17	36.9*	----	------	1	(36.0)	10	34.2
Bicondylar	3	128-135	130.7	18	130.3*	----	------	1	126.0	14	125.6
Bigonial	3	96-110	103.7	18	107.6*	----	------	1	100.0	18	102.6
M. Br. of As. Ramus	6	29-39	35.2	25	35.1*	----	------	1	38.0	21	33.9
Mn. Ang. Mandible	6	113°-125°	118.7°	20	114.8°*	----	------	1	124.0°	20	117.6°
Indices											
Cranial	2	85-91	88.0	18	83.6	----	87.2	1	75.7	52	73.4
Length-Height	1	-	84.0	16	82.7	----	85.0	----	------	----	------
Breadth-Height	1	-	98.7	16	97.9	----	97.6	----	------	----	------
Cranial-Module	1	-	158.0	23	155.0	----	151.7	----	------	----	------
Fronto Parietal	4	63-69	(66.5)		67.2	----	------	1	65.0	51	69.5
Zygo-Frontal	2	68-72	(70.0)	17	67.1	----	------	1	61.9	21	69.0
Fronto-Gonial	2	97-101	99.0	13	111.8*	----	------	1	109.9	18	110.8
Zygo-Gonial	4	66-78	(73.5)	12	73.9*	----	------	1	68.0	10	73.8
Cranio-Facial	2	97-	(97.0)	11	98.4	----	------	1	105.0	20	102.3
Left Orbital	4	79-86	83.2	7	86.1*	----	------	----	------	----	------
Facial	4	85-88	(86.5)	7	88.5*	----	86.0	1	80.3	7	86.9
Upper Facial	4	45-54	(50.2)	14	52.2	----	53.7	----	------	----	------
Nasal	5	45-50	(48.0)	22	48.9	----	50.0	----	------	----	------
Exter.-Palatal	6	112-131	(123.2)	12	126.1*	----	------	1	(134.5)	8	120.5
Mandibular	5	76-87	(81.0)	18	79.8*	----	------	1	87.3	15	79.7

*The Means of Measurements of series from Lu[V]92 are taken from the "Preliminary Report on the Skeletal Material from Pickwick Basin, Alabama", by Newman, M. T. and Snow, C. E., included as a section in *An Archaeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee. B. A. E. Bull., No.* 129 by Webb, Wm. S., and DeJarnette, David L., in press.

[7]Undeformed Crania with C.I. of 80 and over. Hrdlicka, Ales, "The Anthropology of Florida", *Publications of the Florida State Historical Society* No. 1, 1922, p. 113.

COMPARATIVE TABLE IV

FEMALES

Measurement	Moundville (K.I.) No.	Range	Mean	Pickwick (Total K.I.) No.	Mean	Tenn. Stone[8] Grave (Hrdlicka) No.	Mean	Moundville (S.M.) No.	Mean	Pickwick (S.M.) No.	Mean
Max. Circumference	7	482-510	495.9 mm.	16	482.9 mm.	----	------	----	------	----	------
Transverse Arc	6	301-333	317.2	6	316.8*	----	------	----	------	----	------
Sagittal Arc	3	341-367	356.8	3	352.0*	----	------	----	------	----	------
Head Length	5	165-174	169.2	22	164.1	17	161.0 mm.	1	(185.0) mm.	45	176.4 mm.
Head Breadth	4	141-150	144.8	22	139.8	17	140.0	1	(125.0)	49	131.0
Min. Frontal Breadth	5	87-97	91.6	27	91.1	----	------	----	------	----	------
Bizygomatic Breadth	3	134-139	136.3	15	131.5	----	128.0	----	------	----	------
Bigonial Breadth	7	89-106	99.1	----	------	----	------	----	------	----	------
Basion Bregma Height	4	129-149	141.8	15	137.9	----	139.0	----	------	----	------
Basion Nasion Length	5	95-108	101.0	22	98.5	----	------	----	------	----	------
Basion Prosthion	4	91-106	100.2	16	95.5	----	------	----	------	----	------
Total Facial Height	7	110-119	113.9	8	114.8*	----	112.0	----	------	----	------
Upper Facial Height	6	66-73	70.7	18	64.6	----	68.0	----	------	----	------
Nasal Height	7	46-56	50.0	22	48.3	----	48.0	----	------	----	------
Nasal Breadth	6	24-29	26.2	15	23.9	----	25.0	----	------	----	------
Orbital Ht. L.	5	32-37	35.0	9	34.0*	----	------	----	------	----	------
Orbital Br. L.	6	36-41	39.8	5	40.4*	----	------	----	------	----	------
Palate-Ext. L.	5	50-58	54.8	7	53.7*	----	------	----	------	----	------
Palate-Ext. Br.	6	55-70	64.0	7	65.4*	----	------	----	------	----	------
Condylo Sym. Length	6	97-109	102.0	14	101.9*	----	------	1	95.0	12	97.2
Ht. of Symphysis	5	32-38	34.6	9	35.1*	----	------	1	29.0	11	31.9
Bicondylar Br.	5	117-131	123.8	14	120.9*	----	------	1	(107.0)	9	115.6
Bigonial Br.	7	89-107	99.3	15	98.5*	----	------	1	(91.0)	14	96.3
Min. B. of As. Ramus	8	34-38	35.1	16	32.9*	----	------	1	33.0	18	32.6

Palate-Ext. Br.	6	55-70	64.0	7	65.4*	----	-----	----	-----	----	-----
Condylo Sym. Length	6	97-109	102.0	14	101.9*	----	-----	1	95.0	12	97.2
Ht. of Symphysis	5	32-38	34.6	9	35.1*	----	-----	1	29.0	11	31.9
Bicondylar Br.	5	117-131	123.8	14	120.9*	----	-----	1	(107.0)	9	115.6
Bigonial Br.	7	89-107	99.3	15	98.5*	----	-----	1	(91.0)	14	96.3
Min. B. of As. Ramus	8	34-38	35.1	16	32.9*	----	-----	1	33.0	18	32.6
Mean Ang. Mandible	8	117°-126°	122.6°	16	123.9°*	----	-----	1	121.0°	12	120.0°
Indices											
Cranial	4	81-88	85.0	19	85.6	----	86.4	1	(67.6)	43	74.3
Length-Height	4	78-90	84.2	14	84.4	----	89.2	----	-----	----	-----
Breadth-Height	3	89-99	95.3	15	98.1	----	92.4	----	-----	----	-----
Cranial-Module	3	147-156	151.7	20	147.8	----	146.7	----	-----	----	-----
Fronto-Parietal	4	60-66	63.2		65.2	----	-----	----	-----	----	-----
Zygo-Frontal	2	64-70	67.0	12	71.1	----	-----	----	-----	----	-----
Fronto-Gonial	5	100-115	105.8	12	107.5*	----	-----	----	-----	----	-----
Zygo-Gonial	3	65-75	70.3	9	74.5*	----	-----	----	-----	----	-----
Cran'o-Facial	2	94-96	95.0	9	92.2	----	-----	----	-----	----	-----
L. Orbital	5	85-90	88.4	5	81.9*	----	-----	----	-----	----	-----
Facial	3	81-88	84.3	6	86.3*	----	87.5	----	-----	----	-----
Upper Facial	3	50-54	52.0	11	51.7	----	53.0	----	-----	----	-----
Nasal	6	45-63	53.0	14	50.3	----	51.3	----	-----	----	-----
Ext. Palatal	4	119-124	121.5	7	122.0*	----	-----	----	-----	----	-----
Mandibular	5	80-89	83.2	14	83.6*	----	-----	1	(88.8)	8	83.4

*Means of series from Lu[v]92 only is used.

[s]Undeformed crania with C.I. of 80 and over.

Hrdlicka, Ales, "The Anthropology of Florida"' *Publications of the Florida State Historical Society* No. 1 1922, p. 113.

TABLE V

MOUNDVILLE CRANIA FROM PIT BURIALS

MALES

Measurements:							
Skull Number	2180	2681	2176	2174	2549	2532	2529
Sex	Male	Male	Male	Male	Male	Male	Male
Type	S.M.	K.I.	K.I.	K.I.	K.I.	K.I.	K.I.
Age	24	23	23	50+	44	40?	25
Deformation	Sl.W. None	F.Occ.	S. Warping	Occ.	Occ.	Occ.?	Occ.
Max. Circ.	520 mm.	498 mm.	517 mm.	498 mm.	-----	-----	494mm.
Transverse Arc	330	340	344	335	-----	-----	327
Sagittal Arc	385	(340)	373	344	-----	-----	343
Head Length	185	162	176	162	-----	-----	155
Head Breadth	140	152	150	147	155 mm.	(150)mm.	152
Min. Frontal Breadth	91	96	103	98	(97)	100	98
Bizygomatic Breadth	147	(148)	(142)	143	-----	-----	(138)
Bigonial Breadth	100	(114)	104	95	110	-----	(108)
Basion-Bregma Height	-----	148	148	-----	-----	-----	145
Basion Nasion Length	-----	107	106	-----	-----	-----	97
Basion Prosthion	-----	103	(103)	-----	-----	-----	(100)
Total Facial Height	(118)	131	124	(121)	-----	124	119
Upper Facial Height	-----	80	(72)	(65)	-----	74	(71)
Nasal Height	-----	55	51	48	-----	51	51
Nasal Breadth	28	27	(24)	(24)	26	23	25
Orbital Ht. L.	-----	35	36	34	-----	-----	34
Orbital Brd. L.	-----	42	42	43	-----	-----	40
Orbital Ht. R.	-----	36	-----	36	-----	-----	33
Orbital Brd. R.	-----	40	-----	43	-----	-----	40
Nasalia-upper	-----	16	-----	11	-----	-----	12
Nasalia-lower	-----	19	-----	(18)	-----	-----	(18)

Orbital Ht. L.	-----	35	36	34	-----	-----	34
Orbital Brd. L.	-----	42	42	43	-----	-----	40
Orbital Ht. R.	-----	36	-----	36	-----	-----	33
Orbital Brd. R.	-----	40	-----	43	-----	-----	40
Nasalia-upper	-----	16	-----	11	-----	-----	12
Nasalia-lower	-----	19	-----	(18)	-----	-----	(18)
Interorbital Brd.	-----	24	-----	19	-----	23	22
Biorbital Brd.	93	104	100	(49)	53	54	(56)
Palate-Ext. Length	(55)	58	(56)	64	66	69	63
Palate-Ext. Brd.	74	74	(64)	-----	-----	-----	35
Foramen Magnum-L.	-----	-----	-----	-----	-----	-----	32
Foramen Magnum-B.	-----	-----	-----	100	-----	-----	99

MANDIBLES

Males							
Condylo-Sym. L.	110 mm.	109 mm.	99 mm.	98 mm.	106 mm.	(111) mm.	108 mm.
Ht. of As. Ramus	50	59	64	58	57	(58)	52
Ht. of Symphysis	(36)	(40)	37	40	(34)	-----	37
Bicondylar Br.	126	135	(127)	129	128	-----	(124)
Bigonial Br.	100	(114)	105	96	110	-----	(108)
Min. Brd. of As. Ram. Ramus	38	39	35	29	34	38	36
Mean Angle-Mandible	24°	119°	116°	113°	125°	116°	123°

TABLE VI

MOUNDVILLE CRANIA FROM PIT BURIALS

MALES

INDICES

Index Skull number	2180	2681	2176	2174	2549	2532	2529
Cranial	75.7	93.8	85.2	90.7	.....	.....	98.1
Length-Height	.....	91.4	84.1	.....	.....	.....	93.5
Breadth-Height	.....	97.4	98.7	.....	.....	.....	95.4
Cranial Module	.....	154.0	158.0	.....	.....	.....	151.0
Fronto-Parietal	65.0	63.2	68.7	66.7	(62.6)	(66.7)	64.5
Zygo-Frontal	61.9	(64.9)	(72.5)	68.5	.....	.....	(71.0)
Fronto-Gonial	109.9	(118.7)	101.0	96.9	.....	.....	(110.2)
Zygo-Gonial	68.0	(77.0)	(73.2)	66.4	.....	.....	(78.3)
Cranio-Facial	105.0	(97.4)	(94.7)	97.3	.....	.....	(90.8)
L. Orbital	.....	83.3	85.7	79.1	.....	.....	85.0
Facial	80.3	(88.5)	(87.3)	(84.6)	.....	.....	(86.2)
Upper Facial	.....	(54.0)	(50.7)	(45.4)	.....	.....	(51.4)
Nasal	.....	49.1	(47.1)	(50.0)	.....	45.1	49.0
Nasalia-Transverse	.....	84.2	.....	(61.1)	.....	.....	(66.7)
Interorbital	.....	23.1	.....	19.0	.....	.....	22.2
External Palatal	(134.5)	127.6	(114.3)	(130.6)	124.5	127.8	(112.5)
Mandibular	87.3	80.7	(77.9)	76.0	82.8	.....	(87.1)
Foramen Magnum	.....	.....	.....	.....	.....	.....	91.4

TABLE VII

MOUNDVILLE CRANIA FROM PIT BURIALS

FEMALES

Foramen Magnum 91.4

TABLE VII

MOUNDVILLE CRANIA FROM PIT BURIALS

FEMALES

Measurements:									
Skull Number	2177	2178	2188	2548	2189	2547*	2546	2533	2179
Sex	Female	Female	Female	Female	Female	Female	Female	Female	Female
Type	K.I.	K.I.	K.I.	K.I.	S.M.	K.I.	K.I.	K.I.	K.I.
Age	22	26	21	21	----	25	23	-----	23
Deformation	Sl. Occ.	Occ.		F.? Sl. Occ.?	----	Occ.	None	-----	Frontal
Max. Circumference	502 mm.	482 mm.	497 mm.	492 mm.	-----	505 mm.	510 mm.	----	482 mm.
Transverse Arc	319	310	319	301	-----	333	320	-----	(302)
Sagittal Arc	362	(353)	(348)	341	-----	367	(370)	----	(310)
Head Length	174	165	171	166	(185) mm.	163	170	----	152
Head Breadth	141	(140)	143	145	(125)	151	150	-----	150
Min. Frontal Br.	87	93	94	87	-----	100	97	-----	89
Bizygomatic Br.	136	(132)	134	(131)	-----	139	(137)	-----	(136)
Bigonial Br.	89	103	95	100	-----	104	97	-----	106
Basion-Bregma Ht.	-----	149	142	129	-----	-----	147	-----	129
Basion-Nasion-Lg.	-----	108	103	97	-----	-----	102	-----	95
Basion Prosthion	-----	(101)	101	106	-----	-----	103	-----	91
Total Facial Ht.	119	115	112	110	-----	113	112	-----	116
Upper Facial Ht.	73	(68)	70	66	-----	70	72	-----	73
Nasal Height	51	46	51	46	-----	50	50	-----	56
Nasal Breadth	(26)	27	25	29	-----	24	27	-----	25
Orbital Ht. L.	37	34	36	32	-----	(37)	(30)	-----	36

TABLE VII—Continued
MOUNDVILLE CRANIA FROM PIT BURIALS
FEMALES

Measurements:									
Skull Number	2177	2178	2188	2548	2189	2547*	2546	2533	2179
Sex	Female	Female	Female	Female	Female	Female	Female	Female	Female
Type	K.I.	K.I.	K.I.	K.I.	S.M.				
Orbital Brd. L.	41	40	41	36	-----	41	-----	-----	40
Orbital Ht. R.	36	34	36	31	-----	36	(32)	-----	36
Orbital Brd. R.	42	41	39	38	-----	42	(41)	-----	37
Nasalia-upper	13	12	13	12	-----	12	-----	-----	13
Nasalia-lower	-----	(16)	19	18	-----	(18)	-----	-----	15
Interorbital Brd.	(21)	21	23	22	-----	23	-----	-----	22
Biorbital Brd.	99	98	101	96	-----	102	100	-----	96
Palate-Ext. Length	-----	(46)	54	57	-----	(57)	58	-----	50
Foramen Magnum-L.	-----	-----	(33)	-----	-----	-----	-----	-----	-----
Foramen Magnum-B.	-----	-----	28	-----	-----	-----	-----	-----	-----
				MANDIBLES					
Condylo-Sym. L.	(99)mm.	97 mm.	109 mm.	99 mm.	95 mm.	105 mm.	105 mm.	(100)mm.	97 mm.
Ht. of As. Ramus	56	53	52	51	47	55	48	(57)	52
Ht. of Symphysis	(37)	38	32	37	29	33	33	(32)	(31)
Bicondylar Br.	(123)	117	122	119	(107)	131	130	-----	(126)
Bigonial Br.	89	103	95	100	(91)	104	97	(100)	107
Min. Brd. of As. Ramus	35	34	38	36	33	36	34	34	34
Mean Angle-Mandible	117°	125°	126°	123°	121°	120°	124°	122°	124°

*Sex doubtful.

TABLE VIII

MOUNDVILLE CRANIA FROM PIT BURIALS
FEMALES
Indices

*Sex doubtful.

TABLE VIII

MOUNDVILLE CRANIA FROM PIT BURIALS

FEMALES

Indices

Index / Skull Number	2177	2178	2188	2548	2189	2547*	2546	2533	2179
Cranial	81.0	(84.8)	83.6	87.3	(67.6)	92.6	88.2	-----	98.7
Length-Height	-----	90.3	83.0	77.7	-----	-----	86.5	-----	84.9
Breadth-Height	-----	(106.4)	99.3	89.0	-----	-----	98.0	-----	86.0
Cranial Module	-----	(151.0)	152.0	147.0	-----	-----	156.0	-----	144.0
Fronto Parietal	61.7	(66.4)	65.7	60.0	-----	66.2	64.7	-----	59.3
Zygo-Frontal	64.0	(70.4)	70.1	(66.4)	-----	71.9	(70.8)	-----	(65.4)
Fronto-Gonial	102.3	110.7	101.1	114.9	-----	104.0	100.0	-----	119.1
Zygo-Gonial	65.4	(78.0)	70.9	(76.3)	-----	74.8	(70.8)	-----	(77.9)
Cranio-Facial	96.4	(94.3)	93.7	(90.3)	-----	92.0	(91.3)	-----	(90.7)
L. Orbital	90.2	85.0	87.8	88.9	-----	(90.2)	-----	-----	90.0
Facial	87.5	(87.1)	83.6	(84.0)	-----	81.3	(81.7)	-----	(85.3)
Upper Facial	53.7	(51.5)	52.2	(50.4)	-----	50.4	(52.8)	-----	(53.7)
Nasal	(51.0)	58.7	49.0	63.0	-----	48.0	54.0	-----	44.6
Nasalia-Transverse	-----	(75.0)	68.4	66.7	-----	(66.7)	-----	-----	86.7
Interorbital	(21.2)	21.4	22.8	22.9	-----	22.5	-----	-----	22.9
External Palatal	-----	(137.0)	120.4	122.8	-----	(115.8)	119.0	-----	124.0
Mandibular	(80.5)	82.9	89.3	83.2	(88.8)	80.1	80.8	-----	(77.0)
Foramen Magnum	-----	-----	(84.8)	-----	-----	-----	-----	-----	-----

*Sex doubtful.

TABLE IX

MOUNDVILLE MUSEUM PIT BURIALS

Long Bone Measurements (Paired)

HUMERUS

Measurement	Males						Females					
	Right			*Left*			*Right*			*Left*		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
Maximum Length	3	300-312	307.3 mm.	3	302-312	307.3 mm.	4	300-313	306.8 mm.	4	295-312	302.5mm.
Middle Circumference	1	-	66.0	1	-	63.0	--	-	-----	--	-	-----
Bitrochlear Length	3	298-309	305.3	3	299-310	305.0	5	295-312	(302.7)	5	288-309	297.3
Maximum Diameter Head	3	44-47	(45.7)	3	44-46	44.7	4	40-42	40.5	4	40-	40.0
Maximum Middle Diameter	5	21-24	22.8	5	20-23	21.6	5	18-23	20.8	5	19-23	20.6
Minimum Middle Diameter	5	16-19	17.2	5	15-16	15.4	5	14-18	15.6	5	13-17	15.4
Middle Index	5	70-82	75.6	5	68-75	71.4	5	65-80	75.1	5	68-80	74.9

RADIUS

	Males						Females					
Maximum Length	2	225-237	231.5 mm.	2	226-231	228.0 mm.	4	232-245	(237.0)mm.	4	230-242	235.8mm.
Middle Circumference	2	43-36	44.5	2	43-	43.0	--	-	-----	--	-	-----

ULNA

	Males						Females					
Maximum Length	2	260-273	266.5 mm.	2	257-274	265.5 mm.	4	247-259	(251.0)mm.	4	248-256	(251.8)mm.
Middle Circumference	3	46-50	48.3	3	45-52	(49.0)	--	-	-----	--	-	-----

CLAVICLE

	Males						Females					
Maximum Length	5	135-160	(147.9) mm.	5	143-158	(150.7)mm.	4	129-140	(135.0)mm.	4	132-140	(137.0)mm.
Middle Circumference	2	35-38	36.5	2	36-37	36.5	--	-	-----	--	-	-----

LUMBAR VERTEBRAE

	Males						Females					
	Anterior			*Posterior*			*Anterior*			*Posterior*		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
L. I	3	24-28	26.3 mm.	3	27-31	(28.7)mm.	5	23-28	(25.2)mm.	5	24-29	(27.0)mm.
L. II	3	26-28	27.3	3	27-30	(28.7)	5	24-28	(26.0)	5	26-29	27.4

	Males						Females					
	Anterior			Posterior			Anterior			Posterior		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
Middle Circumference	2	35-38	36.5	2	36-37	36.5	--	-	-----	--	-	-----

LUMBAR VERTEBRAE

	Males						Females					
	Anterior			Posterior			Anterior			Posterior		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
L. I	3	24-28	26.3 mm.	3	27-31	(28.7) mm.	5	23-28	(25.2) mm.	5	24-29	(27.0) mm.
L. II	3	26-28	27.3	3	27-30	(28.7)	5	24-28	(26.0)	5	26-29	27.4
L. III	4	27-30	28.2	4	27-31	29.5	5	23-29	(26.4)	5	25-30	(27.6)
L. IV	4	27-31	28.5	5	25-28	(27.2)	5	24-29	(26.8)	5	24-30	(26.8)
L. V	4	28-32	29.5	4	23-38	26.2	6	25-29	(27.6)	6	21-28	23.6
L. VI	--	-	-----	--	-	-----	1	-	28.0	1	-	24.0

LUMBAR INDEX

Males			Females		
No.	Range	Mean	No.	Range	Mean
3	98-105	(101.3)	4	96-102	(100.0)
		(L. VI)	1	-	101.2

SACRUM

	Males			Females		
	No.	Range	Mean	No.	Range	Mean
Sacral Height	4	96-118	109.5	5	98-110	(102.6)
Sacral Breadth	7	106-127	(181.5)	6	106-125	(116.5)
Sacral Index	4	103-118	(109.0)	5	106-126	(113.7)

TABLE X

MOUNDVILLE MUSEUM PIT BURIALS

Long Bone Measurements (Paired)—Continued

PELVIS AS A WHOLE

	Males			*Females*		
	No.	Range	Mean	No.	Range	Mean
Breadth	3	259-278	266.2 mm.	3	255-266	(262.0) mm.
Transverse Diam.	3	115-128	122.8	4	125-136	129.8
Sagittal Diam.	3	94-133	(111.8)	2	105-109	107.0
Sag.-Tran. Index	2	82-85	83.5	2	77-83	80.0

PELVIS—HALVES

	Males						*Females*					
	Right			*Left*			*Right*			*Left*		
Measurement	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
Pelvic Height	2	191-199	195.0 mm.	4	187-215	(202.5) mm.	4	182-204	190.5 mm.	3	185-205	194.8mm.
Pelvic Breadth	2	-	145.0	4	145-155	(149.5)	4	134-154	(142.5)	4	135-155	(147.0)
H./B. Index	1	-	131.0	4	129-152	(135.2)	4	127-141	(134.5)	3	125-135	(129.3)

FEMUR

	Males						*Females*					
Maximum Length	6	416-461	442.2	6	423-469	449.8	5	411-442	423.5	5	415-440	424.3
Middle Circumference	3	86-98	92.0	3	84-92	89.3	-	-	-----	-	-	-----
Maximum Diameter Head	8	42-50	(46.0)	8	42-49	(46.4)	6	39-44	(41.5)	6	39-45	(41.7)
Bicondylar Length	5	411-457	441.5	5	420-466	(448.5)	5	407-435	418.7	5	408-435	419.7
Subtrochanteric A. P. Diam.	9	21-29	26.0	9	21-28	26.0	8	20-25	22.2	8	21-25	23.2
Subtrochanteric Lateral Diam.	9	29-37	(32.8)	9	29-38	33.1	8	29-33	30.8	8	30-32	30.8
Middle A. P. Diameter	9	25-36	31.4	9	25-36	30.8	7	24-30	27.0	7	25-29	27.1
Middle Lateral Diameter	8	25-29	27.2	8	25-30	27.9	7	23-28	24.9	7	23-27	25.1
Platymeria Index	9	68-94	(79.8)	9	66-90	79.2	8	67-81	72.8	8	66-80	74.0
Middle Index	8	78-104	90.2	8	83-108	90.2	7	80-100	92.0	7	83-100	92.6

TIBIA

	Males						*Females*					
Maximum Length	4	355-383	(370.0)	4	353-378	(367.0)	3	334-373	352.5	3	335-369	350.8

Middle A. P. Diameter	9	25-36	31.4	9	25-36	30.8	7	24-30	27.0	7	25-29	27.1
Middle Lateral Diameter	8	25-29	27-2	8	25-30	27.9	7	23-28	24.9	7	23-27	25.1
Platymeria Index	9	68-94	(79.8)	9	66-90	79.2	8	67-81	72.8	8	66-80	74.0
Middle Index	8	78-104	90.2	8	83-108	90.2	7	80-100	92.0	7	83-100	92.6
					TIBIA							
				Males						*Females*		
Maximum Length	4	355-383	(370.0)	4	353-378	(367.0)	3	334-373	352.5	3	335-369	350.8
Middle Circumference	2	86-95	90.5	2	83-95	89.0	--	-	-----	--	-	-----
Physiological Length	4	340-368	(356.0)	4	336-363	(352.5)	5	322-362	336.9	5	321-357	(335.1)
Nutrient Foramen A. P. Diameter	7	31-45	38.3	7	31-44	37.9	5	30-37	34.2	5	31-35	33.2
Nutrient Foramen Lateral Diameter	7	21-28	24.9	7	20-28	24.7	4	18-25	22.0	4	19-24	22.0
Middle A. P. Diameter	8	28-37	33.0	8	29-37	(32.6)	6	28-34	30.3	6	27-33	30.0
Middle Lat. Diameter	8	18-25	21.9	8	18-27	(22.1)	6	18-23	19.7	6	17-22	19.2
Platycnemia Index	7	56-74	64.4	7	52-74	65.6	4	60-69	65.0	4	58-71	66.5
Middle Index	8	54-76	66.8	8	57-75	(68.0)	6	53-77	64.8	6	52-71	64.2
					FIBULA							
				Males						*Females*		
Maximum Length	3	355-370	(364.2)	3	355-370	368.8	3	321-337	(330.2)	3	319-338	330.8
Middle Circumference	2	39-50	44.5	2	38-45	41.5	--	-	-----	--	-	-----

TABLE XI

COMPARATIVE TABLE

HUMERUS

	Males				*Females*			
	Moundville		Lu[v]92 K.I.[a]		Moundville		Lu[v]92 K.I.[a]	
Measurement	Right	Left	Right	Left	Right	Left	Right	Left
	(3)	(3)	(31)	(19)	(4)	(4)	(14)	(13)
Maximum Length	307.3	307.3	326.5	320.9	306.8	302.5	300.9	300.5
	(3)	(3)	(32)	(19)	(4)	(4)	(14)	(12)
Maximum Diameter Head	(45.7)	44.7	46.5	45.4	40.5	40.0	39.5	39.5
	(5)	(5)	(36)	(25)	(5)	(5)	(17)	(15)
Maximum Middle Diameter	22.8	21.6	24.0	22.6	20.8	20.6	20.8	20.3
	(5)	(5)	(37)	(24)	(5)	(5)	(16)	(15)
Minimum Middle Diameter	17.2	15.4	17.7	17.0	15.6	15.4	15.4	15.4
	(5)	(5)	(33)	(24)	(5)	(5)	(16)	(15)
Middle Index	75.6	71.4	74.6	74.9	75.1	74.9	74.1	75.8

RADIUS

	Males				*Females*			
Measurement	Right	Left	Right	Left	Right	Left	Right	Left
	(2)	(2)	(21)	(16)	(4)	(4)	(16)	(11)
Maximum Length	231.5	228.0	253.9	255.4	(237.0)	235.8	228.2	228.9

ULNA

	Males				*Females*			
Measurement	Right	Left	Right	Left	Right	Left	Right	Left
	(2)	(2)	(16)	(14)	(4)	(4)	(11)	(11)
Maximum Length	266.5	265.5	272.6	273.4	(251.0)	(251.8)	245.0	244.3

[a] Ibid.

CLAVICLE

	Males				*Females*			
Measurement	Right	Left	Right	Left	Right	Left	Right	Left
	(5)	(5)	(24)	(20)	(4)	(4)	(8)	(12)
Maximum Length	(147.9)	(150.7)	156.1	155.7	(135.0)	(137.0)	137.6	143.5

LUMBAR VERTEBRAE

Measurement	Males				Females			
	Right	Left	Right	Left	Right	Left	Right	Left
Maximum Length	(5) (147.9)	(5) (150.7)	(24) 156.1	(20) 155.7	(4) (135.0)	(4) (137.0)	(8) 137.6	(12) 143.5

LUMBAR VERTEBRAE

	Males				Females			
	Ant.	Post.	Ant.	Post.	Ant.	Post.	Ant.	Post.
L. I	(3) 26.3	(3) (28.7)	(19) 26.3	(19) 29.3	(5) (25.2)	(5) (27.0)	(15) 25.3	(15) 28.2
L. II	(3) 27.3	(3) (28.7)	(19) 27.4	(19) 29.7	(5) (26.0)	(5) 27.4	(15) 26.4	(15) 28.3
L. III	(4) 28.2	(4) 29.5	(19) 27.6	(19) 29.4	(5) (26.4)	(5) (27.6)	(15) 26.8	(15) 27.8
L. IV	(4) 28.5	(4) (27.2)	(19) 27.6	(19) 27.6	(5) (26.8)	(5) (26.8)	(15) 27.1	(15) 26.9
L. V	(4) 29.5	(4) (26.2)	(19) 29.0	(19) 25.8	(6) (27.6)	(6) 23.6	(15) 28.0	(15) 24.7
Index		(3) (101.3)		(19) 102.2	(4)	(100.0)		(15) 101.2

[a] Ibid.

TABLE XII

COMPARATIVE TABLE—Continued

SACRUM

Measurement	*Males* Moundville	*Males* Lu^{v}92 K.I.	*Females* Moundville	*Females* Lu^{v}92 K.I.
Sacral Height	(4) 109.5	(8) 114.5	(5) (102.6)	(3) 106.5
Sacral Breadth	(7) (118.5)	(7) 123.6	(6) (116.5)	(2) 111.5
Sacral Index	(4) (109.0)	(5) 100.7	(5) (113.7)	(2) 104.5

PELVIS AS A WHOLE

	Males		*Females*	
Total Breadth	(3) 266.2	(8) 291.0	(3) (262.0)	(8) 259.5
Maximum Breadth	(3) 122.8	(10) 129.9	(4) 129.8	(2) 125.0
A. P. Diameter	(3) (111.8)	(7) 105.1	(2) 107.0	(2) 90.5

PELVIS (HALVES)

	Males Moundville		*Males* Lu^{v}92 K.I.		*Females* Moundville		*Females* Lu^{v}92 K.I.	
	Right	Left	Right	Left	Right	Left	Right	Left
Pelvis Height	(2) 195.0	(4) (202.5)	(10) 217.7	(10) 218.0	(4) 190.5	(3) 194.8	(3) 192.2	(4) 191.5
Pelvis Breadth	(1) 145.0	(4) (149.5)	(8) 184.4	(5) 187.3	(4) (142.5)	(4) (147.0)	(2) 174.5	(2) 170.0

FEMUR

	Males				*Females*			
	Right	Left	Right	Left	Right	Left	Right	Left
Maximum Length	(6) 442.2	(6) 449.8	(31) 449.8	(29) 451.0	(5) 423.5	(5) 424.3	(17) 412.8	(16) 412.0
	(5)	(5)	(27)	(27)	(5)	(5)	(15)	(15)

Pelvis Breadth	(1) 145.0	(4) (149.5)	(8) 184.4	(5) 187.3	(4) (142.5)	(4) (147.0)	(2) 174.5	(2) 170.0

FEMUR

	Males				*Females*			
	Right	Left	Right	Left	Right	Left	Right	Left
	(6)	(6)	(31)	(29)	(5)	(5)	(17)	(16)
Maximum Length	442.2	449.8	449.8	451.0	423.5	424.3	412.8	412.0
	(5)	(5)	(27)	(27)	(5)	(5)	(17)	(15)
Bicondylar Length	441.5	(448.5)	449.0	449.0	418.7	419.7	407.1	407.5
	(8)	(8)	(30)	(29)	(6)	(6)	(17)	(15)
Maximum Diameter Head	(46.0)	(46.4)	46.4	46.4	(41.5)	(41.7)	40.5	39.8
	(9)	(9)	(32)	(29)	(8)	(8)	(15)	(17)
Subtrochanteric A. P. Diameter	26.0	26.0	26.8	27.5	22.2	23.2	24.2	23.9
	(9)	(9)	(31)	(31)	(8)	(8)	(19)	(17)
Subtrochanteric Lat. Diameter	(32.8)	33.1	33.3	32.0	30.8	30.8	29.3	28.5
	(9)	(9)	(31)	(32)	(7)	(7)	(19)	(17)
Middle A. P. Diameter	31.4	30.8	31.1	32.1	27.0	27.1	25.8	25.1
	(8)	(8)	(32)	(31)	(7)	(7)	(18)	(17)
Middle Lat. Diameter	27.2	27.9	28.1	27.4	24.9	25.1	23.8	24.3
	(9)	(9)	(31)	(29)	(8)	(8)	(15)	(17)
Platymeria Index	(79.8)	79.2	84.4	85.2	72.8	74.0	83.3	81.3
	(8)	(8)	(31)	(31)	(7)	(7)	(18)	(17)
Middle Index	90.2	90.2	90.5	90.6	92.0	92.6	93.8	97.5

TABLE XIII

COMPARATIVE TABLE—Continued

TIBIA

Measurement	*Males*				*Females*			
	Moundville		Lu[V]92 K.I.[9]		Moundville		Lu[V]92 K.I.	
	Right	Left	Right	Left	Right	Left	Right	Left
	(4)	(4)	(18)	(19)	(3)	(3)	(10)	(10)
Maximum Length	(370.0)	(367.0)	377.2	375.4	352.5	350.8	336.0	337.2
	(7)	(7)	(31)	(29)	(5)	(5)	(16)	(18)
Nutrient Foramen A. P. Diameter	38.3	37.9	37.8	37.5	34.2	33.2	31.9	31.2
	(7)	(7)	(31)	(29)	(4)	(4)	(16)	(18)
Nutrient Foramen Lat. Diameter	24.9	24.7	24.1	24.0	22.0	22.0	21.5	20.8
	(8)	(8)	(31)	(29)	(6)	(6)	(16)	(18)
Middle A. P. Diameter	33.0	(32.6)	34.3	33.9	30.3	30.0	28.8	28.4
	(8)	(8)	(30)	(30)	(6)	(6)	(16)	(18)
Middle Lat. Diameter	21.9	(22.1)	21.9	21.6	19.7	19.2	19.6	18.8
	(7)	(7)	(31)	(29)	(4)	(4)	(13)	(16)
Platycnemia Index	64.4	65.6	69.7	64.2	65.0	66.5	69.7	68.1
	(8)	(8)	(30)	(29)	(6)	(6)	(15)	(16)
Middle Index	66.8	(68.0)	62.1	64.9	64.8	64.2	68.6	68.1

FIBULA

	Males				*Females*			
	Right	Left	Right	Left	Right	Left	Right	Left
	(3)	(3)	(9)	(12)	(3)	(3)	(8)	(6)
Maximum Length	(364.2)	364.8	366.2	366.7	(330.2)	330.8	333.0	329.3

STATURE C

	Males
Sk. No.	
2180	
2174	
2549	
2535	
2542	
	Females
2178	
2182	
2188	
2189	
2546	
2548	

Formula I

Formula I

Formula II

[9] Ibid.

Males: Form

Females: Fo

TABLE XIV

STATURE CALCULATIONS[10] ON MOUNDVILLE PIT BURIALS

Average Stature of Museum Burials

	Males			
	No.	Range	Mean	Mean
Formula I	5	160.9-168.2	164.7 cms.	65.00″
Formula II	5	161.2-168.5	165.0 cms.	65.00″
	Females			
Formula I	6	153.3-160.6	155.7 cms.	61.36″

Stature Calculations by Burial Number

Males	*Formula I*			*Formula II*		
Sk. No.	R.	L.	Av.	R.	L.	Av.
2180	160.63	161.21	160.92	160.89	161.53	161.21
2174	(116.08)	(165.96)	(166.02)	(166.34)	(166.27)	(166.30)
2549	------	164.22	------	------	164.57	------
2535	------	164.11	------	------	164.43	------
2542	(168.16)	168.16	(168.16)	(168.46)	168.52	(168.49)
Females						
2178	155.74	155.86	155.80			
2182	153.04	153.60	153.32			
2188	160.92	160.25	160.59			
2189	------	154.17	------			
2546	(155.52)	155.74	(155.63)			
2548	155.07	154.73	154.90			

[10]Ibid.

Males: Formula I 71.272+1.159 x (F.+T.) cms.

Formula II 71.443+1.22F+1.09 T. cms.

Females: Formula I 69.154+1.126 (F.+T.) cms.

TABLE XV
MOUNDVILLE PIT BURIALS

HUMERUS

Males

Right

No.	Max. L.	Mid. Cir.	Bitro.	Max.D.H.	Max.Mid.	Min.Mid.	Mid.Ind.
2547	-----	-----	-----	-----	21	16	76.2
2186	-----	-----	-----	-----	-----	-----	----
2174	312	66	309	(44)	24	17	70.8
2529	-----	-----	-----	-----	24	20	83.3
2549	310	-----	309	47	24	19	79.2
2535	-----	-----	-----	-----	23	16	69.6
2180	300	-----	298	46	22	18	81.8
Left							
2186	-----	68	-----	-----	24	18	75.0
2176	300	65	323	45	24	16	66.7
2174	312	63	310	44	22	16	72.7
2549	308	66	306	46	23	16	69.6
2535	309	-----	307	43	22	15	68.2
2535A	322	-----	318	(44)	25	16	64.0
2180	302	-----	299	44	20	15	75.0
2547	290	-----	289	42	21	15	71.4

RADIUS

Males

	Right		*Left*	
No.	Max. L.	Mid. Cir.	Max. L.	Mid. Cir.
2180	237	-----	231	----
2186	252	(49)	248	----
2176	-----	-----	253	40
2174	-----	43	249	43
2549	-----	46	240	43
2535	238	-----	-----	----
2547	225	-----	226	----

ULNA

Males

	Right		*Left*	
No.	Max. L.	Mid. Cir.	Max. L.	Mid. Cir.
2179	-----	-----	(255)	----
2180	260	-----	257	----
2186	-----	-----	270	(52)
2176	-----	-----	269	48
2174	273	46	274	45
2529	-----	-----	(287)	----
2549	-----	50	267	50
2535	(255)	-----	-----	----
2547	247	-----	-----	----

TABLE XVI
MOUNDVILLE PIT BURIALS—Continued

CLAVICLE

Males

No.	Right Max. L.	Right Mid. Cir.	Left Max. L.	Left Mid. Cir.
2547	----	----	(149)	----
2176	157	38	158	37
2174	160	35	(158)	36
2182	142	----	143	----
2529	(146)	----	151	----
2535	152	----	----	----
2535A	(135)	----	143	----
2542	----	----	156	----
2180	149	----	----	----

Males *LUMBAR VERTEBRAE*

No.	Anterior L.I	L.II	L.III	L.IV	L.V	Posterior L.I	L.II	L.III	L.IV	L.V	Index
2529	27	28	28	29	29	(28)	30	31	(28)	26	(101.4)
2535	---	---	30	31	32	---	---	29	28	28	------
2549	28	28	28	27	29	31	(29)	31	28	28	(105.0)
2190	24	26	27	27	28	27	27	27	25	23	97.7

Males *SACRUM*

No.	Height	Breadth	Ind.
2180	96	106	110.4
2174	----	113	------
2529	118	(122)	(103.4)
2549	115	121	105.2
2535	108	(127)	(117.6)
2536	----	(120)	------
2547	----	121	------

Males *PELVIS AS A WHOLE*

No.	Br.	Transv.	Sagittal	Ind.
2180	261	115	94	81.7
2549	278	126	----	----
2535	----	----	133	----
2547	259	128	(109)	(85.2)

PELVIC HALVES

Males

No.	Right Ht.	Br.	H/B Ind.	Left Ht.	Br.	H/B Ind.
2180	191	145	131.0	187	145	129.0
2529	----	----	----	210	(155)	(135.5)
2549	----	----	----	215	(151)	(142.4)
2547	199	----	----	(197)	147	(134.0)

TABLE XVII

MOUNDVILLE PIT BURIALS—Continued

FEMUR

Males *Right* No.	Max.L.	Mid.Cir.	Bicon.	Max.D.H.	Sub.A.P.	Sub.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2180	416	-----	411	45	25	29	29	25	86.2	86.2
2186	449	98	448	48	28	34	36	28	82.4	77.8
2174	441	46	440	45	25	33	30	27	75.8	90.0
2529	470	-----	(463)	50	29	32	32	28	90.6	87.5
2549	-----	92	-----	(47)	26	(33)	33	27	(78.8)	81.8
2535	435	-----	-----	-----	24	35	28	27	68.6	96.4
2542	453	-----	451	46	27	37	35	29	73.0	82.9
2536	461	-----	457	45	29	31	35	28	93.6	80.0
2547	-----	-----	-----	42	21	31	25	26	67.7	104.0
Left										
2180	423	-----	420	45	26	29	29	26	89.7	89.7
2186	468	92	458	48	27	33	32	28	81.8	87.5
2176	-----	90	-----	47	26	33	33	27	78.8	81.8
2174	444	84	(442)	(45)	26	32	30	25	81.2	83.3
2185	-----	-----	-----	-----	29	34	34	27	85.3	79.4
2529	-----	-----	-----	(49)	28	33	30	30	84.8	100.0
2549	439	92	433	48	26	35	32	28	74.3	87.5
2535	437	-----	434	42	24	35	28	-----	68.6	-----
2542	458	-----	455	(47)	28	38	36	30	73.7	83.3
2536	469	-----	466	(47)	28	31	35	29	90.3	82.9
2547	(404)	-----	(401)	42	21	32	25	27	65.6	108.0

TIBIA

Males *Right* No.	Max.L.	Mid.Cir.	Physio.L.	Nut.A.P.	Nut.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2180	355	-----	340	35	26	30	22	74.3	73.3
2176	-----	-----	-----	-----	-----	-----	-----	-----	-----

2542	458	-----	455	(47)	28	38	36	30	73.7	83.3
2536	469	-----	466	(47)	28	31	35	29	90.3	82.9
2547	(404)	-----	(401)	42	21	32	25	27	65.6	108.0

TIBIA

Males *Right* No.	Max.L.	Mid.Cir.	Physio.L.	Nut.A.P.	Nut.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2180	355	-----	340	35	26	30	22	74.3	73.3
2176	-----	-----	-----	-----	-----	-----	-----	-----	-----
2174	(377)	86	(363)	37	21	35	19	56.8	54.3
2185	-----	-----	-----	45	25	37	22	55.6	59.5
2529	-----	-----	-----	38	27	34	23	71.1	67.6
2549	364	95	353	40	26	35	24	65.0	68.6
2535	-----	-----	-----	33	(25)	29	22	(75.8)	75.9
2542	(383)	Path. Lip.	368	42	28	36	25	66.7	69.4
2547	-----	-----	324	31	21	28	18	67.7	64.3
Left									
2180	353	-----	336	35	26	29	21	74.3	72.4
2176	-----	-----	-----	-----	-----	-----	-----	-----	-----
2174	(373)	83	(362)	35	20	32	19	57.1	59.4
2185	-----	-----	-----	44	23	37	21	52.3	56.8
2529	-----	-----	-----	37	27	34	25	73.0	73.5
2549	363	95	349	41	28	34	24	68.3	70.6
2535	364	-----	349	-----	-----	(30)	(22)	-----	(73.3)
2542	378	-----	363	42	28	36	27	66.7	75.0
2547	-----	-----	-----	31	21	29	18	67.7	62.1

TABLE XVIII

MOUNDVILLE PIT BURIALS—Continued

FIBULA

Males

No.	*Right* Max. L.	*Right* Mid. Cir.	*Left* Max. L.	*Left* Mid. Cir.
2180	342	-----	-----	-----
2174	(368)	39	369	38
2549	(355)	50	355	45
2542	370	-----	370	-----

TABLE XIX

MOUNDVILLE PIT BURIALS

HUMERUS

Females

Right

No.	Max. L.	Bitro.	Max.D.H.	Max.Mid.	Min.Mid.	Mid.Ind.
2178	313	312	40	23	18	78.3
2182	303	301	40	20	16	80.0
2188	324	318	44	23	15	65.2
2189	-----	(295)	40	18	14	77.8
2546	311	307	42	-----	-----	-----
2548	300	297	41	20	15	75.0
Left						
2178	312	309	40	23	17	73.9
2182	298	296	40	20	16	80.0
2188	-----	-----	-----	22	16	72.7
2189	291	288	40	19	13	68.4
2546	306	302	40	20	15	75.0
2548	295	291	-----	19	15	79.0

RADIUS

Females

No.	*Right* Max. L.	*Left* Max. L.
2177	-----	(222)
2178	(235)	238
2182	232	230
2188	254	-----
2546	245	242
2548	236	233

TABLE XVII—Continued

MOUNDVILLE PIT BURIALS

ULNA

Females

No.	*Right* Max. L.	*Left* Max. L.
2178	247	250
2182	250	248
2546	(248)	(253)
2548	259	256

CLAVICLE

Females

No.	*Right* Max. L.	*Left* Max. L.
2178	(138)	(139)
2188	140	----
2189	(129)	(132)
2546	140	140
2548	134	137

TABLE XX

MOUNDVILLE PIT BURIALS

LUMBAR VERTEBRAE

Females

No.	*Anterior* L.I	L.II	L.III	L.IV	L.V	L.VI	*Posterior* L.I	L.II	L.III	L.IV	L.V	L.VI	Index
2188	26	28	28	29	29	28	29	29	30	30	28	24	101.2
2178	(23)	(24)	(23)	(24)	(26)	----	26	26	25	24	22	----	(102.5)
2182	----	----	----	----	28	----	----	----	----	----	21	----	------
2546	28	28	29	29	29	----	28	28	29	28	24	----	95.8
2548	26	26	26	27	28	----	28	28	(27)	(27)	24	----	(100.8)
2538	(23)	(24)	26	25	25	----	(24)	26	27	25	22	----	(100.8)

SACRUM

Females

No.	Height	Breadth	Index
2178	99	125	126.3
2188	98	114	116.3
2182	99	(106)	(107.1)
2546	(107)	120	(112.2)
2548	(110)	(117)	(106.4)
2538	-----	116	-----

PELVIS AS A WHOLE

Females

No.	Breadth	Trans. Diam.	Sagittal	Trans./Sag.Ind.
2178	265	131	109	83.2
2188	(255)	136	105	77.2
2546	266	127	-----	-----
2538	-----	125	-----	-----

PELVIS—(HALVES)

Females

No.	*Right* Height	Breadth	H./B Ind.	*Left* Height	Breadth	H./B Ind.
No.	Height	Breadth	H./B Ind.	Height	Breadth	H./B Ind.
2178	130	(135)	(141.0)	-----	135	-----
2182	135	146	136.7	135	145	137.1

2546 ..... 266 127
2538 ..... ----- 125

PELVIS—(HALVES)

Females

No.	*Right* Height	Breadth	H./B Ind.	*Left* Height	Breadth	H./B Ind.
No.	Height	Breadth	H./B Ind.	Height	Breadth	H./B Ind.
2178	130	(135)	(141.0)	-----	135	-----
2182	185	146	126.7	185	145	127.6
2188	204	154	132.5	205	(152)	(134.9)
2546	182	(134)	(135.8)	194	155	125.2

Females

FEMUR

Right No.	Max.L.	Bicon.	Max.D.H.	Sub.A.P.	Sub.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2178	419	415	40	25	31	30	24	80.6	80.0
2182	411	409	39	22	29	27	24	75.9	88.9
2188	442	435	44	24	33	28	28	72.7	100.0
2189	-----	-----	-----	21	30	25	25	70.0	100.0
2546	427	426	42	22	31	27	24	71.0	88.9
2548	418	407	42	20	30	24	23	66.7	95.8
2538	-----	-----	(41)	22	30	-----	-----	73.3	-----
2177	-----	-----	(42)	22	32	28	26	68.8	92.9
Left									
2178	422	417	(40)	24	31	29	24	77.4	82.8
2182	415	410	39	22	30	27	24	73.3	88.9
2188	440	435	45	25	32	28	27	78.1	96.4
2189	411	404	(40)	21	31	26	25	67.7	96.2
2546	429	428	42	24	30	28	26	80.0	92.9
2548	416	408	42	21	30	25	23	70.0	92.0
2538	-----	-----	-----	22	30	-----	-----	73.3	-----
2177	418	416	42	23	32	27	27	71.9	100.0

TABLE XX

MOUNDVILLE PIT BURIALS

LUMBAR VERTEBRAE

Females

	Anterior						*Posterior*						
No.	L.I	L.II	L.III	L.IV	L.V	L.VI	L.I	L.II	L.III	L.IV	L.V	L.VI	Index
2188	26	28	28	29	29	28	29	29	30	30	28	24	101.2
2178	(23)	(24)	(23)	(24)	(26)	....	26	26	25	24	22	....	(102.5)
2182	....	....	....	....	28	....	....	....	....	....	21	....	.....
2546	28	28	29	29	29	....	28	28	29	28	24	....	95.8
2548	26	26	26	27	28	....	28	28	(27)	(27)	24	....	(100.8)
2538	(23)	(24)	26	25	25	....	(24)	26	27	25	22	....	(100.8)

SACRUM

Females

No.	Height	Breadth	Index
2178	99	125	126.3
2188	98	114	116.3
2182	99	(106)	(107.1)
2546	(107)	120	(112.2)
2548	(110)	(117)	(106.4)
2538	.....	116	.....

PELVIS AS A WHOLE

Females

No.	Breadth	Trans. Diam.	Sagittal	Trans./Sag.Ind.
2178	265	131	109	83.2
2188	(255)	136	105	77.2
2546	266	127	.....	.....
2538	.....	125	.....	.....

PELVIS—(HALVES)

Females

	Right			*Left*		
No.	Height	Breadth	H./B Ind.	Height	Breadth	H./B Ind.

2178	265	131	109	83.2		
2188	(255)	136	105	77.2		
2546	266	127	-----	-----		
2538	-----	125	-----	-----		

PELVIS—(HALVES)

Females

	Right			*Left*		
No.	Height	Breadth	H./B Ind.	Height	Breadth	H./B Ind.
No.	Height	Breadth	H./B Ind.	Height	Breadth	H./B Ind.
2178	130	(135)	(141.0)	-----	135	-----
2182	185	146	126.7	185	145	127.6
2188	204	154	132.5	205	(152)	(134.9)
2546	182	(134)	(135.8)	194	155	125.2

Females

FEMUR

Right No.	Max.L.	Bicon.	Max.D.H.	Sub.A.P.	Sub.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2178	419	415	40	25	31	30	24	80.6	80.0
2182	411	409	39	22	29	27	24	75.9	88.9
2188	442	435	44	24	33	28	28	72.7	100.0
2189	-----	-----	-----	21	30	25	25	70.0	100.0
2546	427	426	42	22	31	27	24	71.0	88.9
2548	418	407	42	20	30	24	23	66.7	95.8
2538	-----	-----	(41)	22	30	-----	-----	73.3	-----
2177	-----	-----	(42)	22	32	28	26	68.8	92.9
Left									
2178	422	417	(40)	24	31	29	24	77.4	82.8
2182	415	410	39	22	30	27	24	73.3	88.9
2188	440	435	45	25	32	28	27	78.1	96.4
2189	411	404	(40)	21	31	26	25	67.7	96.2
2546	429	428	42	24	30	28	26	80.0	92.9
2548	416	408	42	21	30	25	23	70.0	92.0
2538	-----	-----	-----	22	30	-----	-----	73.3	-----
2177	418	416	42	23	32	27	27	71.9	100.0

TABLE XXI

MOUNDVILLE PIT BURIALS—Continued

TIBIA

Females

Right

No.	Max.L.	Physio.L.	Nut.A.P.	Nut.Lat.	Mid.A.P.	Mid.Lat.	Platy.Ind.	Mid.Ind.
2178	350	338	36	25	30	23	69.4	76.7
2182	334	322	37	-----	32	20	-----	62.5
2188	373	362	36	25	30	21	69.4	70.0
2189	-----	-----	30	18	28	18	60.0	64.3
2546	(340)	330	38	(19)	34	18	(50.0)	52.9
2548	345	331	32	20	28	18	62.5	64.3
Left								
2177	-----	-----	33	22	29	19	66.7	65.5
2178	348	338	35	24	31	22	68.6	71.0
2182	335	321	33	21	30	19	63.6	63.3
2188	369	357	34	24	30	20	70.6	66.7
2189	344	331	33	19	29	18	57.6	62.1
2546	340	(330)	-----	-----	33	17	-----	51.5
2548	344	330	31	21	27	19	67.7	70.4

FIBULA

Females	*Right*	*Left*
No.	Max. L.	Max. L.
2178	(337)	335
2182	321	319
2188	363	-----
2548	332	338

Part 2

Possible Evidence of Scalping At Moundville

POSSIBLE EVIDENCE OF SCALPING AT MOUNDVILLE

In the course of study of the Museum pit burials at Mound State Monument, Moundville, Alabama, in February 1940, it was discovered that the skull of one of the burials was completely encircled by a groove which, beginning at approximately the hairline in front, runs horizontally around the cranial vault. The position of this groove immediately suggested the possibility that the Indian had been scalped and that infection subsequently set in at the line of the cutting (see figures 9 and 10). The skeleton of the burial, M-2177, is that of a female approximately 24 years old, and was found extended on the back, nearly three feet below the surface. Although unaccompanied by artifacts, the burial was similar to those which surround it. The skull, metrically and morphologically, conforms with the round-headed group which is predominant at Moundville.

Dr. George S. Graham, a Birmingham pathologist, and his associates were kind enough to examine the skull and report their diagnosis as follows:

> "The deformity upon skull No. 2177 seems best explained as the result of a scalping injury. The photographs present the characters very clearly and there is probably no need for extended description. It ought, however, to be emphasized, that the grooved deformity extends in irregular horizontal lines about the calvarium, that is, within limits of uniform width and depth, that the marginal lipping is such as might be expected from a repair process following injury and that the floor of the groove consists of a compact bone representing a partial restoration of the external table through new bone formation proceeding from the diploe. A scalping injury might well follow the line represented by the present groove. Here the periosteum could have been destroyed by the cutting instrument while that over the vertex remained intact. Succeeding infection would be capable, I believe, of producing an osteitis limited to the area of denuded bone injury by the deep cut, leaving in its wake a ragged groove that has been successfully smoothed over by a repair growth of new bone. Important to such explanation of the defect is the fact that its relative uniformity suggests a single original injury rather than a discontinuous or long-enduring process of destruction while the repair growth also has an appearance of equal age throughout."

Neumann[11] reports the discovery of a skull from central Illinois which had cuts on the outer surface of the skull vault. This he presents as evidence of scalping among a group of aborigines who possessed a Middle Mississippi culture which has been shown to be prehistoric in Illinois. The only other skull with indications of scalping, he states, was found at the Madisonville cemetery which is a Fort Ancient aspect site within the historic period. It should be noted that the skull described by Neumann shows cutting marks on the outer surface of the vault and not a pathological groove like that from Moundville.

One may infer from Neumann's statement that the scalping complex was centered among the Muskhogean-speaking peoples of the Southeast, and then spread into the more northerly areas. The putative case of scalping which he cites, indicates, at least, that scalping was probably present in Illinois in prehistoric times. On the general subject of scalping in North America, Neumann has drawn heavily upon the researches of Friederici. Neumann states[12]:

> "Scalping . . . . was confined originally in North America to a limited area in the eastern United States, and was most fully developed among the Muskhogean and Timucuan-speaking tribes. The custom extended all over the territory of the present Gulf States, on both sides of the Mississippi, among the Natchez and Tunican tribes, and farther on to the Caddo of Texas. Towards the north, the Hurons and other Iroquois practiced scalping, and it is suggested that they may have acquired the custom through the Cherokee, Tuscarora and the Susquehannock."

He also points out that some of the Algonkian tribes along the lower Saint Lawrence, in Nova Scotia, Maine and down through the Delaware and Chesapeake Bay areas to the Carolinas were also scalping when first encountered by the White man.

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[11]Neumann, Georg K.: "Evidence for the Antiquity of Scalping from Central Illinois;" *American Antiquity,* Volume 5, No. 4, April 1940, pp. 287-289.

[12]Ibid.

Moundville with its many mounds and abundant yields of artifacts, has been placed by Deuel[13] in the Middle Mississippi phase. Since no evidences of White contact have been found in the course of excavation there, the site is regarded as prehistoric.

The possible case of scalping, which is presented here, adds to the evidence that scalping was present in prehistoric Mississippian horizons. That scalping may be prehistoric at Moundville is not surprising if, indeed, the Southeast was the homeland of this custom.

[13]Cole, F. C., and Deuel, T.: *Rediscovering Illinois;* University of Chicago Press, March, 1937, p. 216.

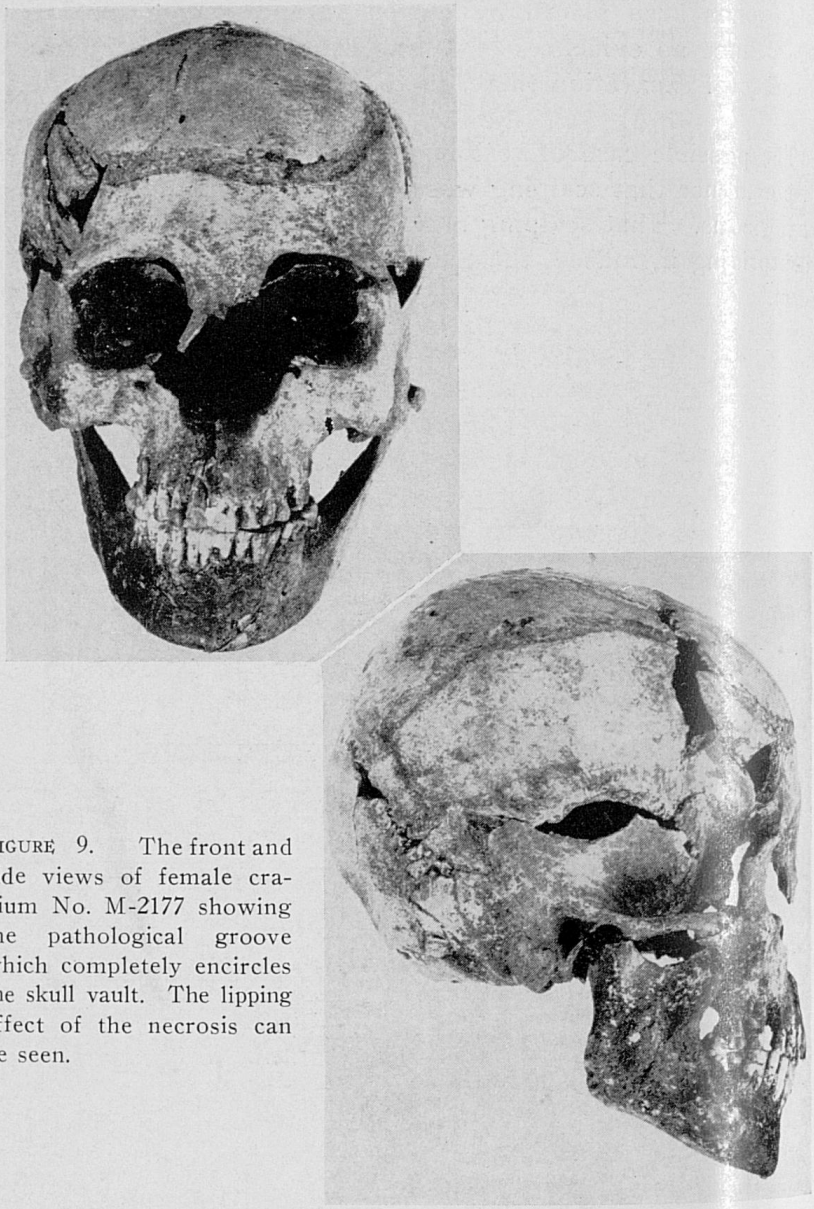

FIGURE 9. The front and side views of female cranium No. M-2177 showing the pathological groove which completely encircles the skull vault. The lipping effect of the necrosis can be seen.

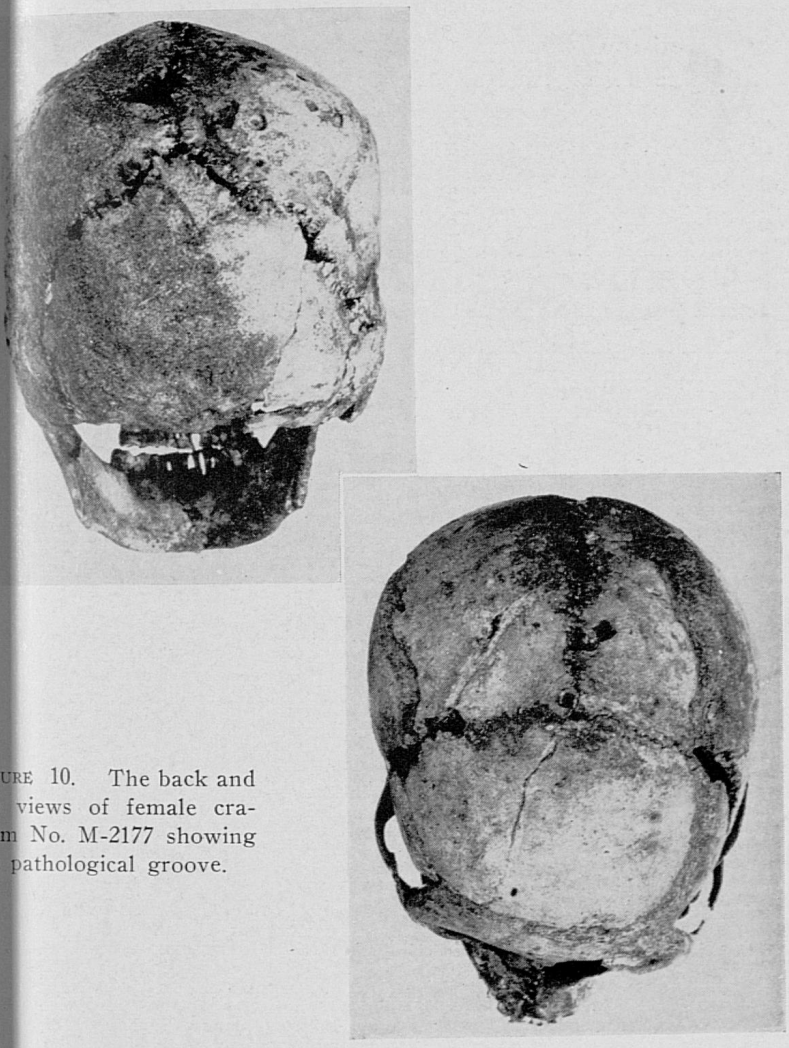

FIGURE 10. The back and top views of female cranium No. M-2177 showing the pathological groove.