Currents of Change

Volume 3 Number 1

Journal of the Falls of the Ohio Archaeological Society

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Journal of the Falls of the Ohio Archaeological Society

Volume 3, Number 1

ISSN 1553-3719

Cover: See Kenneth B. Johnston's article in this issue, page 49.
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Currents of Change is an occasional publication of the Falls of the Ohio Archaeological Society (FOAS), a 501(c)(3) non-profit organization. FOAS is dedicated to legally and ethically promoting the exchange of information on the prehistoric and historic heritage of the Falls region among professional archaeologists, students, avocational archaeologists, Native Americans, collectors, professionals in other disciplines (historians, teachers, etc.), and other members of the interested public.

FOAS publishes articles and news briefs primarily, but not exclusively, about the archaeology of the Falls of the Ohio River region. The Falls Region is centered at Louisville, Kentucky and includes the area within a hundred mile radius, encompassing north-central Kentucky and southern Indiana (see map on back cover). The subject matter of articles and news briefs may address either prehistoric or historic period subjects related to archaeology and the early history of this region. Articles or newsworthy items focusing on areas elsewhere in the Ohio River Valley may also be included.

Contributions by professionals, avocational archaeologists, students, and the interested public are welcomed. Authors wishing to submit papers for publication should contact the Editors at the FOAS website, *www.falls-society.org*, for details about the acceptable file submission and photo formats. Papers in proper file format on disc or CD may be mailed to Sundea Murphy at 5112 Outer Loop, Louisville, KY 40219. All submissions should be accompanied by a brief biographical note (150 words or less) about the author(s).

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To archaeologists, the human past is owned by no one. It represents the cultural heritage of everyone who has ever lived on Earth or will live on it in the future.

Brian Fagan. 1996. *Oxford Companion to Archaeology*. Oxford University Press, New York.

About Our Contributors

Don Ball earned his M.A. from the University of Tennessee and has served the Louisville District of the U.S. Army Corps of Engineers for over 25 years. His professional interests are varied, and include folk architecture, tri-racial isolate research, firearms, historic archaeology, and more.

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Kenneth Johnston was born and raised in Columbus, Ohio, and has a B.A. in Communication from Ohio State University. He works for Nationwide Better Health, Columbus, as a software quality assurance and testing specialist. A resident of Hebron, Ohio, near Flint Ridge and the Newark Earthworks complex, Ken is an amateur archaeologist and artifact collector, with a special interest in crude and opportunistic stone tools. He is a member of the Archaeological Society of Ohio.

Matthew Maley, a Cincinnati, Ohio native, has a Masters degree in Environmental Engineering from the University of Cincinnati. He is a prolific writer, having written 72 articles (to date) related to medical science, microbiology, natural history, and burn prevention. His archaeological interest commenced in 1984, when he began documenting cultural resource sites in Carter County, Kentucky. Mr. Maley's study of Carter County was facilitated by three Kentucky Heritage Council grants and has resulted in the identification of over 280 potential sites, 99 of which have received offical state site designations. He continues his research, with the goal of identifying all the chert outcrops utilized by ancient Native Americans and assessing the distribution of the various chert varieties within Carter County and the surrounding counties.

Sundea Murphy has been studying archaeology since reading *Ancient Life in Kentucky* by Webb and Funkhouser at age eleven. She continues her enthusiastic pursuit through the research and volunteer activities sponsored by FOAS and other archaeological groups.

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SUMMARY OF HISTORIC ERA NATIVE AMERICAN OCCUPATION IN THE CENTRAL CUMBERLAND VALLEY

BY

DONALD B. BALL
LOUISVILLE, KENTUCKY

Although there is no doubt that the depopulation of the area around present day Nashville was complete at the time of the first substantive Euro-American settlement in the late 1700s, the interim period between the demise of the last vestiges of the Cumberlandia chiefdom (Middle Cumberland Culture) after ca. AD 1450 and the establishment of Nashville did witness some minor Native American occupation. As observed by Swanton (1930:405), "The ethnologic condition of the Tennessee and Cumberland valleys during early colonial times has hitherto been involved in great obscurity on account of the few authentic references to the region and the unreliability of the maps of the period." Based upon his extensive research on the history and culture of the southeastern tribes, Swanton (1930:417, 1946:143) contended that the Kaskinampo - a lesser known tribe linguistically related to the Koasati - resided for an indeterminate (but presumably brief) period along the Cumberland River in the late seventeenth century prior. About 1701, it is believed they had relocated to Pine Island in the Tennessee River. At that time, it was estimated that the tribe had 150 warriors and a total population of about 500 individuals. They apparently merged with the Koasati in the early 18th century and thereafter disappeared from the historic record (Swanton 1946:143-144, 1952:224-225).

The examination of several early maps of what was to become the southeastern United States was simultaneously helpful and frustrating in locating both early rivers and the settlements (or lack thereof) adjacent to them. As is quickly obvious upon examining such maps, cartographers of the era all too frequently substituted artistic flourishes and fanciful drawings of natives and creatures real or imaginary for what they lacked in the way of accurate geographical knowledge. Bearing such handicaps in mind, two maps prepared by Guillaume Delisle (De l'Isle), a French cartograpgher, are of immediate interest. A 1703 map entitled *Carte du Mexique et de la Florida...* (Cumming 1962:PLATE 43) (**Figure 1**) depicts three sizable rivers flowing into the left (south) bank of the Ohio River near its western terminus. The unidentified (and likely nonexistent) river closest to the confluence of the Mississippi and Ohio rivers is labeled the "R[iviere] de Caskinempa." Somewhat to the east, a pair of rivers - presumably the Tennessee and Cumberland rivers - appear. Midway along the course of the river which should correspond with the Cumberland River, three Indian villages are noted, one of which is labeled "Village les Caskinampo." In Delisle's 1718 map entitled *Carte de la Louisiane...* (Cumming 1962:PLATE 47) (**Figure 2**), the following notation appears along the length of the Cumberland River: "Riviere des anciens Chaouanons ainsi nommeé parceque les Chaouanons y habitoient autresois" ("The River of the ancient Chaouanons was thus named because the Chaouanons lived there in the past"), with no villages noted. Significantly, the Chaouanons (also spelled "Chaouesnons" and similar variants) are identifiable as the Shawnee (cf. Howard 1981:5-6, Mooney 1910). Thus, the Cumberland River was known as the River of the Ancient Shawnee in the early eighteenth century.

Two additional maps appearing in Temple (1975) were also examined. The earliest of these is a reproduction of a hand drawn and undated map apparently dating to the early eighteenth century entitled *Nouvelle Carte de la Louisiane et la fleuve Mississipi...* and attributed to "M. de Noyon" (Temple 1975:PLATE LXIII). In common with the Delisle map of 1703, this map also depicts three rivers flowing into the left (south) bank of the Ohio River near its western terminus and they are similarly labeled. Four settlements are marked along the central reach of what appears to be

the Cumberland River including one labeled "village des Caskinampas." The final map examined is a portion of a map entitled *North America...* by Bowen and Gibson printed in London in 1763 (Temple 1975:PLATE LXXII) (**Figure 3**). Considerably more accurate than its predecessors, this map clearly depicts the "Cherokee or Hogohegee River" (Tennessee River) and the "Cumberland R[iver]." No villages are shown along the course of the Cumberland River south of the dividing line between the colonies of Virginia and (North) Carolina. Despite their lack of detail, in concert these four maps appear to support Swanton's contention that the little known Kaskinampo resided in the area near present day Nashville about the end of the seventeenth century. Furthermore, the maps suggest that the Kaskinampo's occupation was contemporary with, or soon thereafter supplanted by, the Shawnee.

Historical data regarding Shawnee occupation in the region is meager and frequently inconsistent. Tracing their movements is further complicated by the fact that the Shawnee lived and moved as fractured groups rather than as a monolithic, unified tribe. By Haywood's (1823:208) account, at least one group of Shawnee lived in or near Nashville "as early as 1650, if not earlier" thereby suggesting that their occupancy of the area overlapped with the Kaskinampo. He further observed (Haywood 1823:206) that:

> General [James] Robertson stated in his life time, in relation to the Shawanese [i.e., Shawnee] what he had learned of it [their occupancy within the region] from them. They say, that about a century and a half ago, the Shawanese were settled in this country, and were scattered over it, from the Tennessee [River] to the spot where Nashville now is, and even considerably north of the Cumberland. A little more than a century ago, or about the year 1700, they left this country and went to the northern tribes, and were received by the Six Nations as a wandering tribe, but were *not allowed to have any claim to the soil*, further than to obtain temporary subsistence at the discretion of the Six Nations" [emphasis in original].

Apparently constant attacks by the Cherokee were the primary motivation for Shawnee abandonment of the Cumberland River Valley area and sizable portions of Kentucky (Haywood 1823:220, 225).

Clark (1977:10) has suggested that, "…around 1670 the Shawnee had lived on the Cumberland River and on the Ohio [River] between the mouths of the Muskingum and the Wabash [rivers]." He further observes (Clark 1977:11) that "By 1680 the principal locations of the Shawnee were in the Cumberland Valley and along the Savannah River in South Carolina." A particularly strong case for the presence of the Shawnee in the Nashville area is made by Clark's (1977:12) observation that:

> Most of the maps dating from 1670 call what is today the Cumberland River the 'Riviére des Chaouanons.' In fact it was identified as the Shawnee River until nearly the end of the eighteenth century. When the French traders came into this area in the 1670s, the Shawnee had a principal village on the Cumberland River, near the present site of Nashville, which had been occupied [by them] as early as 1665.

In *The Annals of Tennessee*, Ramsey (1853:45) observes that about 1714, "…the Cherokees and Chickasaws expelled the Shawnees from their numerous villages upon the lower Cumberland [River]." Halbert (1902:413, 418), Jones (1876:155-157), and Myer (1894) provide further discussion on Shawnee occupation along the Cumberland River (see also Swanton 1952:225-229). Shawnee occupation in Kentucky during this period is addressed by Beckner (1932). Ramsey (1853:45) further remarks that in the same year (i.e., 1714):

> M. Charleville, a French trader from Crozat's colony at New-Orleans, came among the Shawnees then inhabiting the country upon the Cumberland river, and traded with them. His store was built upon a mound near the present site of Nashville,

> on the west side of [the] Cumberland river, near French Lick Creek, and about seventy yards from each stream" [see also Haywood 1823:207-208 for additional information on Charleville's personal recollections of this trading post].

Ramsey drew some of his descriptive locational data from Haywood (1823:127-128) who in turn also reported that the mound upon which the Charleville trading post was located had been excavated in July 1821 by Ralph E. W. Earl. Without further elaboration, Jones (1876:52) observed that "This mound also had been stockaded by the Cherokees between the years 1758 and 1769."

One of the very few instances in which substantive archaeological evidence of post-Cumberlandia Native American presence in the central Cumberland Valley has been documented occurred in the description (Stack 1944:14) of a grave excavated in Cheatham County:

> Near the mound, a shallow grave in the shell deposit contained a skeleton believed to be that of a young woman. On the skull was found a crescent-shaped hair ornament, a string of shell beads, several perforated bears' teeth, and a pick-shaped object; a string of glass beads was also found with this burial. *This grave was of no great antiquity*… [emphasis added].

No mention was made to the effect that this burial was associated with a stone box grave.

In summary, at least three historically identifiable tribes - Kaskinampo, Shawnee, and Cherokee - are known to have resided in or near Nashville following the abandonment of the area by the Cumberlandia people (ca. AD 1450) but prior to early exploration and initial settlement by English speaking colonists (1769 and afterwards). None of the these groups appear to have intensively occupied the region and all are archaeologically poorly known along the central reaches of the Cumberland River.

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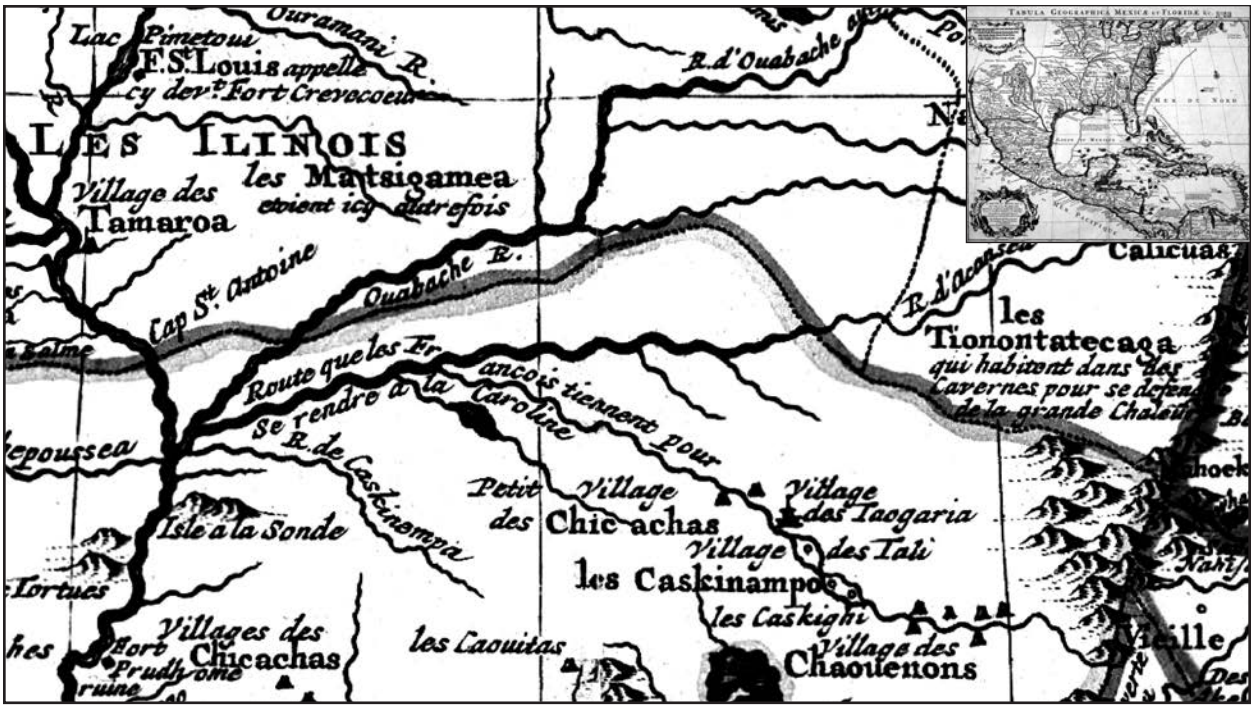

FIGURE 1. PORTION OF GUILLAUME DE L'ISLE 1703 MAP SHOWING THE MYSTERIOUS R[IVIERE] DE CASKINEMPA AND THE VILLAGE LES CASKINAMPO.

(Map courtesy of the Norman B. Leventhal Map Center at the Boston Public Library)

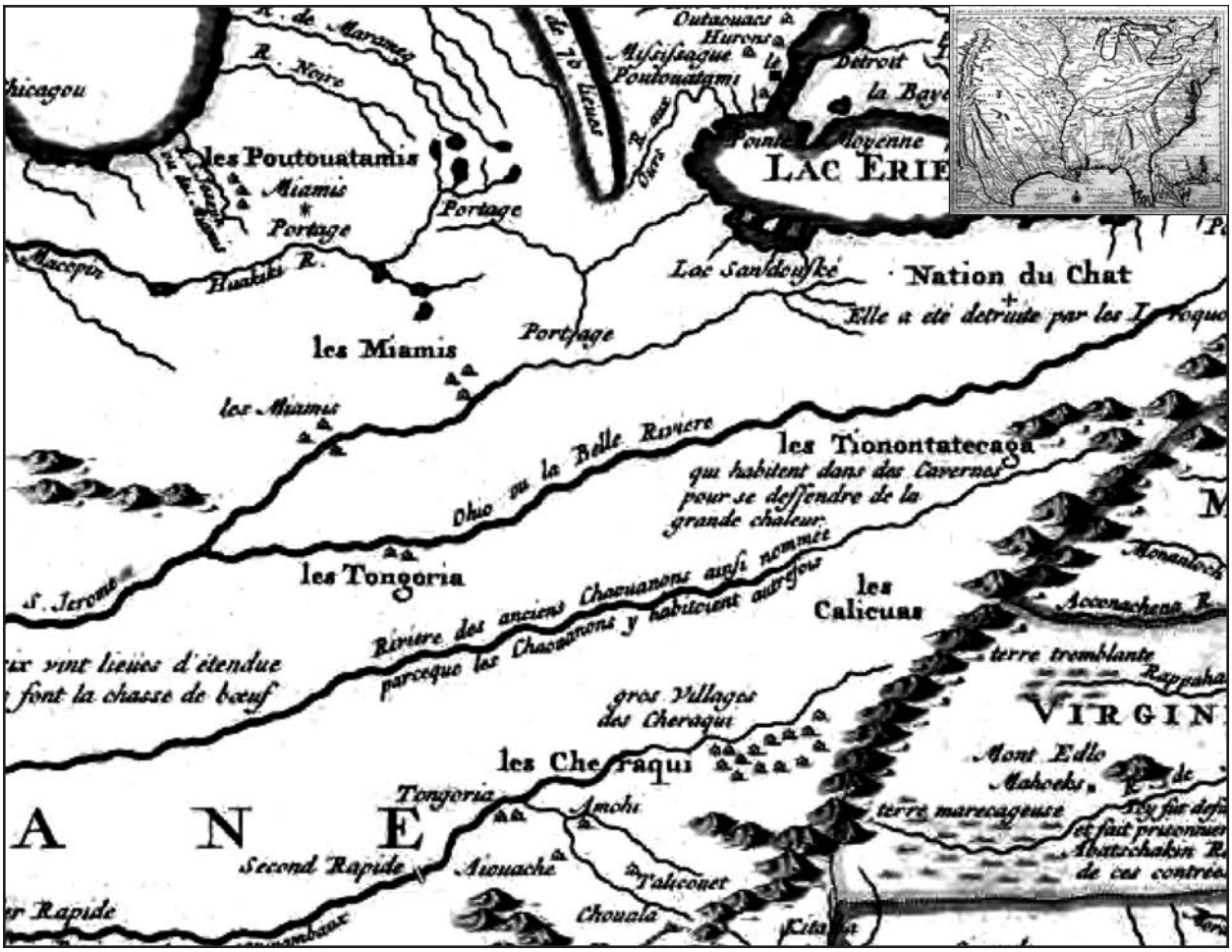

FIGURE 2. PORTION OF GUILLAUME DE L'ISLE 1718 MAP DESIGNATING THE CUMBERLAND RIVER AS "RIVIERE DES ANCIENS CHAOUANONS AINSI NOMMEÉ PARCEQUE LES CHAOUANONS Y HABITOIENT AUTRESOIS." [THE RIVER OF THE ANCIENT CHAOUANONS WAS THUS NAMED BECAUSE THE CHAOUANONS LIVED THERE IN THE PAST].

(Map courtesy of Louisiana State University Libraries Special Collections)

FIGURE 3. PORTION OF BOWEN AND GIBSON MAP DEPICTING THE TENNESSEE RIVER AS THE "CHEROKEE OR HOGOHEGEE RIVER." THE CUMBERLAND RIVER IS TO THE NORTHEAST.

(Map courtesy of the Library of Congress American Memory Collection - Maps of North America)

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Norman B. Leventhal Map Center at the Boston Public Library

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BRICK MANUFACTURERS IN LOUISVILLE, KENTUCKY BETWEEN 1860 AND 1870

BY

CHARLES D. HOCKENSMITH
KENTUCKY HERITAGE COUNCIL
FRANKFORT, KENTUCKY

INTRODUCTION

The brick yards of Louisville have supplied the millions of bricks needed for new construction projects in the city. Earlier research by the author (Hockensmith 2001a:122) indicated that at least 196 brick companies and individuals manufactured brick in Louisville and Jefferson County at various times in its history. Previous articles have dealt with the period from 1818-1850 (Hockensmith 2004) and the period 1850-1860 (Hockensmith 2003). Future articles are planned to deal with the period of 1870 to the modern period of brick making in Louisville. This current article focuses on the decade between 1860 and 1870, when the Louisville's brick industry was thriving.

This paper compiles data from several sources to discuss specific brick makers and to make some general observations about the brick industry between 1860 and 1870. By utilizing information extracted from the Census of Manufacturing for 1860 and 1870, it is possible to look at specific aspects of brick making in Louisville. Topics covered in these Census records include the number of reported brick yards, amounts of capital invested, amounts and values of raw materials used, the size of individual labor forces, wages, sources of power, quantities of bricks produced, annual income, etc. Statewide and city directories were also useful sources of information on Louisville brick makers.

It must be remembered that some of these companies started production before 1860 and some were still in business after 1870. Thus, some comments will be provided about the longevity of the brick makers. The main body of this paper is a listing of all known brick companies and individuals that operated yards in Louisville during the decade. When available, information from the Census of Manufacturing schedules and street locations from city directories are included. The discussion section summarizes the brick yards as a group. Next, comparisons are made between the Louisville brick makers and Kentucky brick makers located elsewhere in the state. Finally, some suggestions for future research are offered.

THE COMPANIES

The 1860 Census of Manufacturing listed only six brick makers (United States Federal Census 1860) while *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859* and 1860 listed ten brick makers for Louisville (Hawes 1859:383). Likewise, the 1859-1860 Louisville directory listed ten brick makers (Tanner 1859:262). This discrepancy suggests that some brick makers were overlooked by the 1860 Census takers. The 1861 city directory for Louisville listed 14 brick makers (Tanner 1861:280). The 1864 business directory listed only one brick yard (Campbell 1864:247). Edwards' 1865-1866 Louisville directory included four brick makers (Edwards, Greenough and Deved 1865:623). By the time the 1866-1867 Louisville directory was published, only seven brick makers were included (Edwards, Greenough and Deved 1866:450). In the 1867-1868 directory of Louisville, 14 brick yards and dealers were included (Southern Publishing Company 1867:107). The 1868-1869 directory listed 14 brick makers in Louisville (Southern Publishing Company 1868:107). The number of brick makers increased to 23 in the 1869 Louisville directory (Southern Publishing Company 1869:427). In 1870, the Louisville

directory listed only 10 brick yards (Southern Publishing Company 1870:426). The 1870 Census of Manufacturing listed 18 brick makers (United States Federal Census 1870). It appears that figures for some years include brick dealers as well as brick manufacturers. Also, it is apparent that businesses were charged fees to be listed in the directories, since known brick yards are not always listed.

The Louisville brick makers are listed below in alphabetical order. Directories between 1870 and 1880 were also checked to give some information on the longevity of Louisville brick makers listed below. Since this period of history will be dealt with in a future article, no specific information is provided here for these later years. A total of 54 individuals, partnerships, and companies were listed in Louisville between 1860 and 1870. These listings can be further subdivided into 39 individuals, 12 partnerships, and two companies. Some of these listings may represent spelling variations in the names of some brick makers.

Akers, Frank: Frank Akers was listed in the 1867-1868 Louisville directory as having a brick yard on the west side of Shelby at the corner of Kentucky (Southern Publishing Company 1867:107). He was also listed in the 1868-1869 Louisville directory on the west side of Shelby at the corner of Kentucky (Southern Publishing Company 1868:107). Akers was not listed in the 1871 or 1872 directories, but was included in 1879.

Baear, John: John Baear was included in the Edward's 1869 directory of Louisville as having a brick yard on Shelby near Caldwell (Southern Publishing Company 1869:427). Baear appears to be a different spelling of Beier (see listing below). He was also included in the 1871 directory.

Beier, Christ: The Manufacturing Census for 1870 indicated that Christ Beier had $4,000 of capital invested, spent $1,000 on wood and dirt, had two dirt mills, employed five male work hands and five children, spent $2,000 on yearly wages, operated six months, produced 1,000,000 bricks, and earned $6,000 of income (United States Federal Census 1870). He was not mentioned in the directories for this decade, but is probably a relative of John Beier.

Beier, John: John Beier was listed in the 1867-1868 Louisville directory as having a brick yard on the west side of Shelby, between Breckinridge and Caldwell (Southern Publishing Company1867:107). Beier was also listed in the 1868-1869 Louisville directory on the west side of Shelby, between Breckinridge and Caldwell (Southern Publishing Company 1868:107). Beier appears to be a different spelling of Baear (see listing above).

Brown, Charles A.: The Louisville city directory for 1866-1867 listed Charles A. Brown on Clay at the northeast corner of Caldwell under brick yards and dealers (Edwards, Greenough & Deved 1866:450). Charles Brown was included in the Edward's 1869 directory of Louisville as having a brick yard on Caldwell, between Clay and Shelby (Southern Publishing Company 1869:427).

Brown & Robards: Brown & Robards were listed in the 1865-1866 Louisville directory as having a brick yard on the east side of Shelby, south of Broadway (Edwards, Greenough & Deved 1865:623). This was probably a partnership between Charles A. Brown and a Mr. Robards.

Cook & Tyler: The Louisville city directory for 1866-1867 listed Cook & Tyler on the west side of 18th, between Maple and Lexington under brick yards and dealers (Edwards, Greenough & Deved 1866:450). Unfortunately, no further information was found for Cook & Tyler. They were probably merchants that sold bricks.

Crandell, Thomas R.: Thomas R. Crandell was listed in the 1867-1868 Louisville directory as having a brick yard on the south side of Kentucky, between Preston and Jackson (Southern Publishing Company 1867:107). Crandell was also listed in the 1868-1869 Louisville directory on the south side of Kentucky, between Preston and Jackson (Southern Publishing Company 1868:107).

Crutchfield, Edward: Ed Crutchfield was first listed as a brick maker on the north side of Jefferson opposite the Orphan Asylum in the 1844-1845 Louisville directory (Poor 1844:215). In the 1848 Louisville directory, Edward Crutchfield was listed as a brick maker on Jefferson above the Creek (Collins 1848:48). The Louisville city directory for 1848-1849 listed Edward Crutchfield as a brick manufacturer with a brick yard on Jefferson above Creek (Jegli 1848:99, 269). The Manufacturing Census for 1850 indicated that Crutchfield had $5,000 of capital invested, employed an average of 40 hands, paid $720 of monthly wages, used both horse and hand power, produced four million bricks annually, and earned $18,000 (United States Federal Census 1850). E. Crutchfield was listed as a 34-year-old brick maker from Virginia in the 1850 Population Census (Louisville Genealogical Society 1995). During 1851, Edward Crutchfield's brick yard was located on Jefferson beyond Bridge (Jegli 1851:94). In 1859, he operated a brick yard located on the south side of Broadway, between Hancock and Clay (Tanner 1859:262). Crutchfield was also listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The Louisville city directory for 1866-1867 listed Edward Crutchfield on the west side of 19th beyond Broadway (Edwards, Greenough & Deved 1866:450). Crutchfield was included in the Edward's 1869 directory of Louisville as having a brick yard on 19th at the corner of Maple (Southern Publishing Company 1869:427). He was listed for the last time in the 1871 Louisville directory.

Egar, Nicholas: Nicholas Egar was listed at 808 and 810 East Broadway in 1861 (Tanner 1861:280). He was probably just a merchant that sold bricks.

Ernst, Robert: Robert Ernist was listed in the 1865-1866 Louisville directory as having a brick yard on the southwest corner of Hamilton and Broadway (Edwards, Greenough & Deved 1865:623). Also, Robert Ernst was included in the Edward's 1869 directory of Louisville as having a brick yard on Kentucky near Shelby (Southern Publishing Company 1869:427). Ernest was included in Louisville directories in 1871, 1876, 1877, 1878, 1879, and 1880.

Figg, Benoni: Benoni Figg must have started in the brick business just before the end of 1850, since he was listed as a brick maker on the west side of Main, between Cabel and Webster (Jegli 1851:114). By 1858, Figg was operating a brick yard on the corner of Shelby and Broadway (Hurd and Burrows 1858:235) and at Preston, at the southeast corner of Broadway, in 1859-1860 (Tanner 1859:262). He was also, listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The 1861 Louisville directory listed Benoni Figg on Jackson at the southeast corner of Broadway (Tanner 1861:280).

Figg, Hamilton T.: The Louisville directory for 1844-1845 listed Hamilton Figg as a wagoner located on Main near Geiger's Mill (Poor 1844:239). In 1848, Hamilton T. Figg was listed as a brick maker on Main above Woodland Garden (Collins 1848:66). The 1848-1849 Louisville directory listed Hamilton T. Figg as a brick manufacturer with his brick yard on Washington above Woodland Garden (Jegli 1848:114, 269). The Manufacturing Census for 1850 indicated that Figg had $2,000 of capital invested, employed an average of 10 hands, paid $200 of monthly wages, used both horse and hand power, produced one million bricks annually, and earned $4,500 (United States Federal Census 1850). H. I. Figg was listed as a 35-year-old brick maker born in Kentucky in the 1850 Population Census (Louisville Genealogical Society 1995). The following year, Hamilton Figg was listed as the proprietor of the brick yard on the north side of Main, back of William Maxey & Company's porkhouse (Jegli 1851:114). Also, Figg was listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The 1859-1860 city directory noted that Figg had a brick yard on the north side of Campbell, between Jackson and Hancock (Tanner 1859:262). In 1861, Hamilton Figg was listed on Kentucky, between Jackson and Hancock (Tanner 1861:280). Hamilton Figg was listed in the 1867-1868 Louisville directory as having a brick yard on the south side of Caldwell, between

Preston and Jackson (Southern Publishing Company1867:107). He was listed in the 1868-1869 Louisville directory on the south side of Caldwell, between Preston and Jackson (Southern Publishing Company 1868:107). Hamilton T. Figg was included in the Edward's 1869 directory of Louisville as having a brick yard on Jackson at the corner of Caldwell (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed Hamilton T. Figg as having a brick yard on Caldwell northeast at the corner of Jackson (Southern Publishing Company 1870:426). The Manufacturing Census for 1870 indicated that H. T. Figg had $2,000 of capital invested, purchased 800 cords of wood ($2,800), had one mud wheel, employed 12 male work hands and five children, spent $3,700 on yearly wages, operated six months, produced 1,500,000 bricks, and earned $9,000 of income (United States Federal Census 1870). He was also listed in the Louisville city directories for 1871, 1872, and 1874.

Figg, Legrand R.: Legrand R. Figg operated a brick yard located on the east side of 21st, between Main and Rowan (Tanner 1859:262). The Manufacturing Census for 1860 indicated that L. R. Figg had $4,000 of capital invested, purchased 500 loads of wood ($1,600), 250 loads of clay ($125), utilized hand power, employed 15 male work hands, spent $300 on monthly wages, produced 1,000,000 bricks, and earned $5,000 of income (United States Federal Census 1860). He was listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The 1861 Louisville directory listed Legrand R. Figg on the east side of 21st, between Main and Rowan (Tanner 1861:280).

Frank, Jacob: The Manufacturing Census for 1870 indicated that Jacob Frank had $3,000 of capital invested, purchased 500 cords of wood ($1500), employed six male work hands and six children, spent $2,000 on yearly wages, operated six months, produced 1,000,000 bricks, and earned $6,000 of income (United States Federal Census 1870). Caron's 1872 Louisville directory listed J. T. Franck's brick yard on Shelbyville Pike near Southall (Caron 1872:560). He was also listed in Louisville directories for 1874, 1876, 1877, 1878, 1879, and 1880.

Gans & Komp: Gans and Komp were listed in the 1867-1868 Louisville directory as having a brick yard on 15th at the southwest corner of Maple (Southern Publishing Company1867:107). Also, Gans & Komp were listed in the 1868-1869 Louisville directory on 15th at the southwest corner of Maple (Southern Publishing Company 1868:107). Gans & Komp were included in the Edward's 1869 directory of Louisville as having a brick yard on 15th at the southwest corner of Maple (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed Gans & Komp as operating a brick yard on 15th at the southwest corner of Maple (Southern Publishing Company 1870:426). The Manufacturing Census for 1870 indicated that Gans & Komp's brick yard had $1,000 of capital invested, purchased 600 cords of wood ($2,400) and spent $550 on clay, had two temper wheels, 12 brick molds, 10 wheel barrows, used horse and hand power, employed 15 male work hands and four children, spent $3,538 on yearly wages, operated six months, produced 2,000,000 bricks, and earned $12,500 of income (United States Federal Census 1870). They were also listed in Louisville directories for 1871, 1874, 1876, and 1877.

Hahn, Worden P.: Worden P. Hahn was listed as a brick maker and ice seller on Bullit near Water in 1848 (Collins 1848:83). In the earlier Louisville directory for 1845-1846, W. B. Hahn was listed as an ice dealer on the east side of Bullit near Water (Jegli 1845:93). The Louisville city directory for 1848-1849 listed W. P. Hahn as a brick manufacturer (Jegli 1848:269). Hahn was listed as a dealer in ice on Bullitt, between Main and Water and also the proprietor of a brick yard on Jefferson and Beargrass (Jegli 1848:129). The Manufacturing Census for 1850 indicated that Hahn had $2,500 of capital invested, employed an average of 30 hands, paid $600 of monthly wages, used both horse and hand power, produced 1.5 million bricks annually, and earned $6,700 (United States Federal Census 1850). The following year, Worden P. Hahn was listed as the proprietor of a brick yard at the center of Broadway and Campbell and was also an ice dealer

(Jegli 1851:133). W. P. Hahn was listed under brick in the 1864 Louisville Business Directory as having an office on Bullitt at the water works and 3rd (Campbell 1864:247).

Halarmet, William: The Manufacturing Census for 1860 indicated that William Halarmet had $2,500 of capital invested in his brick yard, purchased 650 loads of wood ($2,100), 600 loads of clay ($240), utilized hand and horse power, employed 16 male work hands, spent $400 on monthly wages, produced 1,500,000 bricks, and earned $7,500 of income (United States Federal Census 1860). The Louisville city directory for 1866-1867 listed William Halarmet on the west side of Elizabethtown Turnpike, between Kentucky and Southgate (Edwards, Greenough & Deved 1866:450). The Manufacturing Census for 1870 indicated that William Halammert had $500 of capital invested, purchased 800 cords of wood ($3,600) and spent $700 on clay, had one temper wheel, 12 brick molds, 18 wheel barrows, used horse and hand power, employed 12 male work hands and three children, spent $1,500 on yearly wages, operated six months, produced 2,500,000 bricks, and earned $9,250 of income (United States Federal Census 1870). William Holommuth [sic] was included in the Edward's 1869 directory of Louisville as having a brick yard on 18th, between Southgate and Kentucky (Southern Publishing Company 1869:427). He was listed in the Louisville directories for 1871, 1874, 1876, 1877, 1878, 1879, 1880.

Harlammert & Planke: The Louisville city directory for 1866-1867 listed Harlammert & Planke on the west side of 18th, between Southgate and Kentucky (Edwards, Greenough & Deved 1866:450). This was probably a partnership between William Halarmet and William Planke who are both listed separately in this article.

Kendall & Berger: Kendall & Berger were listed in the 1867-1868 Louisville directory as having a brick yard on the west side of 18th, between Broadway and Maple (Southern Publishing Company 1867:107). They were listed in the 1868-1869 Louisville directory on the west side of 18th, between Broadway and Maple (Southern Publishing Company 1868:107). Kendall & Berger were included in the Edward's 1869 directory of Louisville as having a brick yard on 18th, between Maple and Broadway (Southern Publishing Company 1869:427). Finally, they were listed in the 1871 and 1872 Louisville directories.

Konhors, Henry: Henry Konhors operated a brick yard located on the north side of Broadway, between Wenzel and Underhill during 1859-1860 (Tanner 1859:262). Also, he was listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The 1861 Louisville directory listed Henry Konhors on Broadway at the southeast corner of Preston (Tanner 1861:280).

Kroup, Lawrence: Lawrence Kroup was included in the Edward's 1869 directory of Louisville as having a brick yard on Shelbyville turnpike near Southard (Southern Publishing Company 1869:427). No additional information was encountered for Lawrence Kroup.

Krupp, Henry: The 1861 Louisville directory listed Henry Krupp at 804 and 806 East Broadway (Tanner 1861:280). Henry Krupp was listed in the 1865-1866 Louisville directory as having a brick yard on the east side of Shelby, between Breckinridge and Kentucky (Edwards, Greenough & Deved 1865:623). The Louisville city directory for 1866-1867 listed Henry Krupp on the east side of Shelby, between Breckinridge and Kentucky (Edwards, Greenough & Deved 1866:450). Henry Kroop [sic] was included in the Edward's 1869 directory of Louisville as having a brick yard on the east side of Shelby, between Breckinridge and Caldwell (Southern Publishing Company 1869:427). He was also listed in the Louisville directories for 1871, 1872, 1878, 1879, and 1880.

Krupp & Bros.: The Manufacturing Census for 1870 indicated that Krupp & Bros. had $6,000 of capital invested, purchased 1,500 cords of wood ($4,500), had horse and hand power, employed 25 male work hands and no children, spent $8,000 on yearly wages, operated six months, produced 3,000,000 bricks, and earned $18,000 of income (United States Federal Census 1870). They were listed in city directories for 1874, 1876, and 1877.

Louisville Steam Brick Works: The Louisville Steam Brick Works was listed in the 1867-1868 Louisville directory as having a brick yard and office at the northwest corner of 10th and Lexington (Southern Publishing Company1867:106). An ad in the 1868-1869 Louisville directory for the Louisville Steam Brick Works noted that James L. C. Matthews was the proprietor and that they "...will furnish Contractors and Builders with the best quality of pressed and repressed Brick in any quantities and at lowest market prices. Office and Yard, Northwest Cor. 10th and Lexington" (Southern Publishing Company 1868:107). The company published a nice ad with a drawing in the Louisville directory for 1868-1869 (Southern Publishing Company 1868:106-107).

Lyter, N. S.: The Manufacturing Census for 1870 indicated that N. S. Lyter had $5,000 of capital invested, spent $360 on ground rent and $1,000 on fuel, employed 16 male work hands and four children, spent $5,000 on yearly wages, operated seven months, produced 2,000,000 bricks, and earned $12,000 of income (United States Federal Census 1870). H. S. Lyter was listed in the Louisville directories for 1871, 1874, and 1878.

Lyther, Henry: Henry Lyther was listed in the 1867-1868 Louisville directory as having a brick yard on the south side of Kentucky, between Brook and Floyd (Southern Publishing Company1867:107). Also, Lyther was listed in the 1868-1869 Louisville directory on the south side of Kentucky, between Brook and Floyd (Southern Publishing Company 1868:107). He was also listed in the city directories for 1876 and 1877.

McCollum, J. P.: J. P. McCollum was included in the Edward's 1869 directory of Louisville as having a brick yard on Breckinridge, between Clay and Jackson (Southern Publishing Company 1869:427). He was also listed in the 1871 Louisville directory.

McCollum & McCord: The 1861 Louisville directory listed McCollum & McCord on Shelby, between Jacob and Hamilton (Tanner 1861:280). This listing may represent a partnership between either J. P. McCollum or Solomon McCollum and a Mr. McCord.

McCollum, Solomon: S. McCollum was listed in the 1867-1868 Louisville directory as having a brick yard on the south side of Maple, between 12th and 13th (Southern Publishing Company 1867:107). S. McCollum was listed in the 1868-1869 Louisville directory on the south side of Maple, between 12th and 13th (Southern Publishing Company 1868:107). S. McCullum was included in the Edward's 1869 directory of Louisville as having a brick yard on the south side of Maple, between 12th and 13th and Portland Avenue below 26th (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed S. McCollum as having a brick yard on Bank near 6th Cross, Portland (Southern Publishing Company 1870:426). The Manufacturing Census for 1870 indicated that S. McCollum had $30,000 of capital invested, purchased 200 cords of wood ($800) and 200 cords of coal ($800), had one mud wheel, employed 12 male work hands and two children, spent $2,700 on yearly wages, operated six months, produced 1,800,000 bricks, and earned $9,000 of income (United States Federal Census 1870). The 1850 Population Census listed Solomon McCullon as a 21-year-old brick maker born in Ireland (Nacke n.d.:131). He was living with brick maker James Molona and was obviously the younger brother of James McCullon. Undoubtedly, he was an employee of Molona's brick yard. He was also listed in the Louisville directories for 1871, 1872, 1874, 1876, 1877, and 1880.

McCollum & Overton: The 1861 Louisville directory listed McCollum & Overton on the south side of Breckinridge, between Preston and Jackson (Tanner 1861:280). This probably was a partnership between Solomon McCollum and a Mr. Overton.

Malona, James: In 1841, James Malona was listed as a brick maker located on the east side of 7th, between Chestnut and Prather (Collins 1841:64). By 1843, Malona was still listed as a brick maker at the same address (Collins 1843:95). The Manufacturing Census for 1850 indicated that James Molona had $3,855 of capital invested, employed an average of 28 hands, paid $560 of

monthly wages, used horse power, spent $400 on preparing clay, spent $2,600 on wood and coal, spent $100 on horse feed, produced 2.8 million bricks annually, and earned $12,100 (United States Federal Census 1850). The 1850 Population Census listed James Molona as a 51-year-old brick maker born in Kentucky (Nacke n.d.:131). He was also listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). Malona was listed as operating a brick yard in 1859 on Magazine at the southeast corner of 15th (Tanner 1859:262). The Manufacturing Census for 1860 indicated that James Maloney had $4,000 of capital invested, purchased 1,000 loads of wood ($3,250), 1,000 loads of clay ($400), utilized hand and horse power, employed 22 male work hands, spent $375 on monthly wages, produced 2,000,000 bricks, and earned $11,000 of income (United States Federal Census 1860). The 1861 Louisville directory listed James Malona on Magazine at the southeast corner of 15th (Tanner 1861:280).

Matthews, James L. C.: J. L. C. Matthews included in the Edward's 1869 directory of Louisville as having a brick yard on 10th at the corner of Lexington (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed James L. C. Matthews as having a brick yard on the west side of 10th, between Broadway and Kentucky (Southern Publishing Company 1870:426). He was the owner of the Louisville Steam Brick Works between 1867 and 1869 (Southern Publishing Company 1867:106, 1868:106-107).

Meyer & Harlammert: Edward's 1870 directory of Louisville listed Meyer & Harlarmmert as having a brick yard on the south side of Maple, between 17th and 18th (Southern Publishing Company 1870:426). The Manufacturing Census for 1870 indicated that Meyers & Harlammert had $600 of capital invested, purchased wood ($2,700) and spent $600 on clay, had one temper wheel, 12 brick molds, 20 wheel barrows, used horse and hand power, employed 21 male work hands and one child, spent $8,000 on yearly wages, operated six months, produced 2,000,000 bricks, and earned $15,000 of income (United States Federal Census 1870). They were also listed in the 1872 city directory. This was probably a partnership between a Mr. Meyer and William Halarmet (spelling varies).

Meyer, Schulte & Company: Meyer, Schulte & Company was included in the Edward's 1869 directory of Louisville as having a brick yard on Maple, between 17th and 18th (Southern Publishing Company 1869:427). They were probably just brick dealers or merchants since they were not mentioned elsewhere.

Nally, William A.: William A. Nally was listed in the 1845-1846 Louisville directory as a brick maker on the east side of 7th beyond Broadway (Jegli 1845:136). In 1848, William Naly [sic] was listed as a brick maker at 51 7th at the south side of Prather (Collins 1848:148). The Manufacturing Census for 1850 indicated that Nally had $1,620 of capital invested, employed an average of 18 hands, paid $360 of monthly wages, used horse power, spent $320 on preparing clay, purchased 200 cords of wood for $1,800, spent $100 on horse feed, produced two million bricks annually, and earned $8,500 (United States Federal Census 1850). In the 1850 Population Census, William A. Nally was listed as a 31-year-old brick maker born in Kentucky (Nacke n.d.:137). The Manufacturing Census for 1860 indicated that W. A. Nally had $4,000 of capital invested, purchased 1,200 loads of wood ($3,900), 1,300 loads of clay ($480), utilized hand and horse power, employed 32 male work hands, spent $800 on monthly wages, produced 8,000,000 bricks, and earned $15,000 of income (United States Federal Census 1860).

Nally, W. A. & Berger: Nally & Berger were listed in the 1867-1868 Louisville directory as having a brick yard on the north side of Kentucky, between 14th and 15th (Southern Publishing Company1867:107). They were listed in the 1868-1869 Louisville directory on north side of Kentucky, between 14th and 15th (Southern Publishing Company 1868:107). W. A. Nally & Berger were included in the Edward's 1869 directory of Louisville as having a brick yard on 15th at the northeast corner of Kentucky (Southern Publishing Company 1869:427). Edward's 1870 directory

of Louisville listed Nally & Berger as having a brick yard on 15th near the corner of Kentucky (Southern Publishing Company 1870:426). The Manufacturing Census for 1870 indicated that Nally & Berger had $2,000 of capital invested, purchased 400 cords of wood ($1,600) and spent $250 on clay, had one temper wheel, 3 brick molds, 6 wheel barrows, used horse and hand power, employed 4 male work hands and four children, spent $1,800 on yearly wages, operated six months, produced 1,200,000 bricks, and earned $6,000 of income (United States Federal Census 1870).

Perkins, Frederick A.: Frederick A. Perkins was listed in the 1867-1868 Louisville directory as having a brick yard on Kentucky at the southwest corner of Jackson (Southern Publishing Company 1867:107). Perkins was listed in the 1868-1869 Louisville directory on Kentucky at the southwest corner of Jackson (Southern Publishing Company 1868:107). F. A. Perkins was included in the Edward's 1869 directory of Louisville as operating a brick yard on Kentucky near Clay (Southern Publishing Company 1869:427). The Manufacturing Census for 1870 indicated that F. A. Perkins had $5,000 of capital invested, purchased 1,000 cords of wood ($4,000), had one mud wheel, employed 28 male work hands and four children, spent $5,400 on yearly wages, operated six months, produced 2,000,000 bricks, and earned $12,000 of income (United States Federal Census 1870). He was also listed in the Louisville directories for 1872, 1874, 1876, 1877, 1878, 1879, and 1880.

Planke, William: Operated a brick yard located on the west side of Elizabethtown Turnpike near Maple (Tanner 1859:262). He was also listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383. The Manufacturing Census for 1860 indicated that William Plank had $2,500 of capital invested, purchased 650 loads of wood ($2,100), 600 loads of clay ($240), utilized hand and horse power, employed 16 male work hands, spent $400 on monthly wages, produced 1,500,000 bricks, and earned $7,500 of income (United States Federal Census 1860). The 1861 Louisville directory listed William Planke on the west side of Elizabethtown Turnpike near Maple (Tanner 1861:280). William Planke was listed in the 1867-1868 Louisville directory as having a brick yard on the west side of 18th, between Southgate and Kentucky (Southern Publishing Company1867:107). He was listed in the 1868-1869 Louisville directory on the west side of 18th, between Southgate and Kentucky (Southern Publishing Company 1868:107). William Planke was included in the Edward's 1869 directory of Louisville as having a brick yard on 18th, between Southgate and Kentucky (Southern Publishing Company 1869:427). He was also listed in the 1871 Louisville directory.

Plienge, William: The Manufacturing Census for 1870 indicated that William Plienge had $21,000 of capital invested, purchased 800 cords of wood ($3,600), spent $400 on clay, had two temper wheels, 8 brick molds, 18 wheel barrows, used horse and hand power, employed 14 male work hands and no children, spent $4,500 on yearly wages, operated six months, produced 1,600,000 bricks, and earned $10,000 of income (United States Federal Census 1870). Plienge's brick yard was listed on the south side of Garland Avenue near 21st in 1874 (Caron 1874:605). He was also listed in the 1876 Louisville directory.

Reick, John: John Reick operated a brick yard located on Madison at the southeast corner of Campbell (Tanner 1859:262). He was also, listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). This appears to be the same man as J. F. Rieke who ran a brick yard at the head of Madison, between Campbell and Creek (Hurd and Burrows 1858:235). The 1861 Louisville directory listed John Reick on Madison at the southeast corner of Campbell (Tanner 1861:280).

Rogers & Kendall: The Manufacturing Census for 1870 indicated that Rogers & Kendall had $600 of capital invested, purchased 900 cords of wood ($4,050) and spent $564 on clay, had one temper wheel, 12 brick molds, 21 wheel barrows, used horse and hand power, employed 17 male work hands and six children, spent $8,000 on yearly wages, operated six months, produced

2,250,000 bricks, and earned $17,808 of income (United States Federal Census 1870). No other information was encountered for this partnership.

Sawyer, William A.: William A. Sawyer was included in the Edward's 1869 directory of Louisville as having a brick yard on Caldwell near Beargrass (Southern Publishing Company 1869:427). He was not mentioned in other city directories of the period.

Scheer, George F.: G. F. Scheer was listed in the 1867-1868 Louisville directory as having a brick yard at 574 Shelby (Southern Publishing Company1867:107). G. F. Scheer was also listed in the 1868-1869 Louisville directory at 574 Shelby (Southern Publishing Company 1868:107). The Manufacturing Census for 1870 indicated that Fred Scheer had $6,000 of capital invested, spent $1,250 on wood and dirt, had two dirt mills, employed seven male work hands and six children, spent $2,700 on yearly wages, operated six months, produced 1,200,000 bricks, and earned $7,200 of income (United States Federal Census 1870). The Louisville directories for 1874, 1876, 1877, and 1878 listed Scheer.

Schnickert, R.: The Manufacturing Census for 1870 indicated that R. Schnickert had $15,000 of capital invested, purchased 1,000 cords of wood ($3,700), had mud and wheels, employed 20 male work hands and two children, spent $4,500 on yearly wages, operated six months, produced 2,000,000 bricks, and earned $12,000 of income (United States Federal Census 1870). Schneickert Bros.'s brick yard was listed on Underhill at the southeast corner of Cooper in 1872 (Caron 1872:560). He may have been a brother of Valentine Schnikert.

Schnikert, Valentine: The 1861 Louisville directory listed Valentine Schnikert at 1049 East Green (Tanner 1861:280). Valentine Schneikert was listed in the 1867-1868 Louisville directory as having a brick yard on the Underhill east of Bardstown Pike (Southern Publishing Company1867:107). He was also listed in the 1868-1869 Louisville directory on Underhill east of Bardstown Pike (Southern Publishing Company 1868:107). Valtine Sueikert [sic] was included in the Edward's 1869 directory of Louisville as having a brick yard at 181 Underhill (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed Valentine Schneikert as having a brick yard on the south side of Work House Road, between Cooper and Pine (Southern Publishing Company 1870:426). Finally, he was listed in the 1874 city directory.

Schoppenhorst, Henry: Henry Schoppenhorst was listed as a 34-year-old Prussian-born brick maker in the 1850 Population Census (Nacke n.d.:236). Later directories indicate that he operated a brick yard located on Henry at the west side of Elizabethtown Turnpike near Broadway (Tanner 1859:262). He was also listed in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The Manufacturing Census for 1860 indicated that Henry Schoppenhorst had $3,000 of capital invested, purchased 800 loads of wood ($2,600), 900 loads of clay ($270), utilized hand and horse power, employed 20 male work hands, spent $500 on monthly wages, produced 2,000,000 bricks, and earned $10,000 of income (United States Federal Census 1860). The 1861 Louisville directory listed Henry Schoppenhorst on the west side of Elizabethtown Turnpike near Broadway (Tanner 1861:280). The Louisville city directory for 1866-1867 listed Henry Schoppenhorst on the west side of 18th, between Maple and Broadway (Edwards, Greenough & Deved 1866:450). Schoppenhorst was also listed in another 1867-1868 Louisville directory as having a brick yard on the west side of 15th, between Lexington and Delaware (Southern Publishing Company1867:107). Henry Schoppenhorst was listed in the 1868-1869 Louisville directory on the west side of 15th, between Lexington and Delaware (Southern Publishing Company 1868:107). He was included in the Edward's 1869 directory of Louisville as having a brick yard on the west side of 15th, between Delaware and Lexington (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed Henry Schoppenhorst as having a brick yard on the west side of 15th, between Maple and Southgate (Southern Publishing Company 1870:426). The Manufacturing Census for 1870

indicated that Henry Schoppenhorst had $1,000 of capital invested, purchased 600 cords of wood ($2,400) and spent $450 on clay, had two temper wheels, 10 brick molds, 12 wheel barrows, used horse and hand power, employed 12 male work hands and four children, spent $7,500 on yearly wages, operated six months, produced 2,250,000 bricks, and earned $8,500 of income (United States Federal Census 1870). He was also listed in the Louisville city directories for 1871, 1874, 1876, 1877, 1878, 1879, and 1880.

Sheer, Fred: Edward's 1870 directory of Louisville listed Fred Sheer as having a brick yard on Kentucky at the southeast corner of Hancock (Southern Publishing Company 1870:426). This may be a spelling variation of G. F. Scheer (using his middle name) listed above.

Sheer, George F.: George F. Sheer was included in the Edward's 1869 directory of Louisville as having a brick yard on Shelby at the corner of Breckinridge (Southern Publishing Company 1869:427). This may be a spelling variation of G. F. Scheer (using his middle name) listed above.

Weaver, George: George Weaver was included in the Edward's 1869 directory of Louisville as having a brick yard on Shelby Mik [sic] (Southern Publishing Company 1869:427). He was also listed in the 1871 Louisville directory.

Weber, George: George Weber was listed in the 1865-1866 Louisville directory as having a brick yard on the west side of Logan, south of Broadway (Edwards, Greenough & Deved 1865:623). The Manufacturing Census for 1870 indicated that G. Weber had $6,000 of capital invested, spent $1,025 on wood and dirt, had two dirt mills, employed seven male work hands and six children, spent $2,700 on yearly wages, operated six months, produced 1,300,000 bricks, and earned $7,800 of income (United States Federal Census 1870). He was also listed in the 1872 city directory.

Welish, Ackers & Company: Welish, Ackers & Company was included in the Edward's 1869 directory of Louisville as having a brick yard on Shelby at the corner of Kentucky (Southern Publishing Company 1869:427). Edward's 1870 directory of Louisville listed Wellish, Akers & Company as having a brick yard on Shelby at the southwest corner of Kentucky (Southern Publishing Company 1870:426). They were also listed in the Louisville directories for 1871, 1872, 1874, 1876, 1877, and 1879.

Werts, William: William Werts operated a brick yard located on York, between Brent and Campbell (Tanner 1859:262). He was also listed in the Manufacturing Census for 1850 (United States Federal Census 1850) and in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859:383). The 1861 Louisville directory listed William Werts on York, between Brent and Campbell (Tanner 1861:280).

Yancey, Taylor & Company: The Manufacturing Census for 1870 indicated that Taylor Yancey & Company had $1,000 of capital invested, purchased 500 cords of wood ($2,250) and spent $350 on clay, had one temper wheel, 12 brick molds, 8 wheel barrows, used horse and hand power, employed 15 male work hands and two children, spent $1,000 on yearly wages, operated five months, produced 1,000,000 bricks, and earned $7,500 of income (United States Federal Census 1870). They were also listed in the Louisville directory for 1871.

DISCUSSION

Using information extracted from the 1860 and 1870 Manufacturing Censuses schedules, comparisons are made at three levels. First, summary data are provided for the brick yards operating in 1860 and then those in operating in 1870. Second, the changes that occurred in the Louisville brick industry between 1860 and 1870 are briefly discussed. Third, comparisons are made between the Louisville brick makers and other Kentucky brick makers of the same period.

The 1860 Census of Manufacturing listed six individuals producing bricks in Jefferson County (United States Federal Census 1860). The capital invested in these businesses ranged from $2,500 to $4,000. In terms of fuel, wood usage ranged from 500 to 1,200 loads. Fuel cost ranged from $1,600 to $3,900 annually with most yards spending between $2,100 and $3,900. Using available figures, loads of wood would sell for between $3.20 and $3.25 per load. Clay was used in quantities ranging from 250 to 1,300 loads annually. Cost for clay ranged from $125 to $480, with most yards spending between $240 and $480 for clay per year. Loads of clay were selling between 30 cents and 50 cents, with most clay available for 40 cents a load. Five brick makers described their power source as both hand and horse, while only one yard was using hand power alone. Between 15 and 32 males worked at the yards, with most brick yards employing 15 to 22 workers. Brick yards spent between $300 and $800 on monthly wages. The approximate male wages were $17.04 to $25.00 per month, with most yards paying employees $25.00 per month.

Annual production figures for Louisville brick makers during 1860 varied greatly (United States Federal Census 1860). The smallest yard produced 1,000,000 bricks while the largest manufacturer made 8,000,000 bricks. Prices per thousand bricks ranged from $1.87 to $5.50. The most common price was $5.00 per thousand bricks. In terms of annual earnings, brick yard incomes ranged from $5,000 to $15,000.

The 1860 Census of Manufacturing appears to be incomplete for many areas of the Commonwealth including Louisville (United States Federal Census 1860). A comparison of listings in *George W. Hawes' Kentucky State Gazetteer and Business Directory for 1859 and 1860* (Hawes 1859) with the 1860 Census reveals that many brick makers and dealers were not included in the Census. At least six individuals listed by Hawes (1859:383) were not listed in the 1860 Census of Manufacturing. It is not known whether the missing brick makers were simply overlooked by Census takers, or whether they did not generate enough income in 1860 to be included in the Census.

The 1870 Census of Manufacturing listed 18 brick makers operating yards in Jefferson County (United States Federal Census 1870). Using the information presented in the census schedules, several summary statements can be made about Louisville brick makers during this period (United States Federal Census 1870). The operations were listed under the name of the owner, rather than by company names during this period. The size of the brick yards run the entire spectrum, ranging from a low of $500 of capital invested to a high of $30,000 of capital invested. Most Louisville brick makers had between $1,000 and $6,000 of capital invested, while one producer had $15,000 of capital and one brick yard had the large sum of $30,000 in capital invested. Production costs for these operations included the purchase of clay, which ranged from $250 to $700 annually. One brick maker was listed as firing his bricks with both wood and coal ($800 for 200 loads). Fuel cost for wood ranged from $800 to $4,050 annually, with quantities ranging from 200 cords to 1,000 cords of wood. Wood cost ranged from $3.00 to $4.50 per cord of wood with most wood selling for $4.00 to $4.50 per cord. In terms of power sources, most brick yards were listed using horses in combination with hand power. Equipment mentioned in the 1870 Manufacturing Census included wheels (n=1), two dirt mills (n=3), one mud wheel (n=3), one tempering wheel (n=5), two tempering wheels (n=2), three to 12 brick molds (12 molds was the most common quantity), and six to 21 wheel barrows per yard. The labor force varied from a low of five men to a high of 28 male hands, but only four yards employed 20 or more men. Several brick yards employed from one to six children, with four to six children being the most common number employed. Total yearly wages for brick yards ranged from $1,000 up to $8,000 but most brick yards spent between $2,000 and $5,400 per year on labor. Since labor was given as a total, it is difficult to estimate how much men were paid versus the children.

Most brick yards in 1870 operated six months per year, while one brick yard operated five months and another brick yard operated seven months. Annual brick production figures in Louisville varied for 1870. The lowest yield was 1,000,000 bricks, while the brick yard with the greatest yield produced three million bricks (United States Federal Census 1870). Most of the yards produced between one and two million bricks annually. Only two brick yards produced over two million bricks annually. The annual income of the brick yards ranged from $6,000 to $18,000, but most yards earned between $6,000 and $12,000 annually. More than half the brick yards earned between $4,000 and $9,000 annually. Using the production figures and the annual income, the approximate value of the bricks can be estimated. The price per thousand bricks ranged from about $5.00 to $7.91. Over half the yards sold their bricks between $5 and $6 per thousand bricks.

By comparing the figures from the Manufacturing Censuses for 1860 and 1870, some general comments can be made about changes in the Louisville brick industry during this decade. When looking at the capital invested, the dollar range was greater for 1870 than in 1860. Fuel cost for brick yards increased slightly from 1860 to 1870. The brick yards of 1860 had fewer male employees than the yards of 1870. On the other hand, the smaller yards of 1870 had a greater range in the number of employees than the yards of 1860. The average brick production per yard increased between 1860 and 1870. However, the largest yard of 1860 produced up to 2.5 times as many bricks as the largest yard of 1870. The reason that fewer bricks were produced in large brick yards in 1870 than in 1860 is currently unknown. The bricks price per thousand increased between 1860 and 1870. Also, the average brick maker was making more money in 1870 than in 1860.

A number of comparisons can be made between Louisville and the state as a whole for 1860. Capital investments for brick yards in Kentucky ranged from $150 to $10,000 (Hockensmith 2002:77), while Louisville brick yards of 1860 had ranges in capital from $2,500 to $4,000. In 1860, Kentucky brick yards earned a range of $600 to $15,000 per yard (Hockensmith 2002:77), while Louisville brick yards were earning $5,000 to $15,000 per yard. Kentucky brick yards in 1860 employed 3 to 32 men (most yards worked 10-16 men) (Hockensmith 2002:77). Louisville brick yards for the same period had employee ranges of 15 to 32 men (most had 15-22 men). In 1860, Kentucky brick yards had a range of $50 to $800 for monthly labor in 1860 (Hockensmith 2002:77), while Louisville brick yards had slightly higher labor cost ($300 to $800) for the same period.

Fuel consumption and fuel costs can also be compared for 1860. Wood was the primary fuel for burning bricks in Kentucky (Hockensmith 2002:77). Kentucky fuel cost in 1860 ranged between $75 and $3,900 (Hockensmith 2002:77), while Louisville brick yards spent between $2,100 and $3,900. Fuel consumption in Kentucky was 600 to 1,300 cords, while Louisville yards reported between 500 and 1,200 loads of wood.

The 1860 Kentucky brick production figures ranged from 220,000 to 8 million bricks per yard, with values ranging between $5.50 and $6.00 per thousand (Hockensmith 2002:77). In Louisville during 1860, brick production ranged between 1 million and 8 million with values ranging between $1.87 and $5.50 (most $5) per thousand. Kentucky brick yard incomes for 1860 ranged from $600 and $15,000 (Hockensmith 2002:77). Louisville brick yards earned much more than the typical state ranges, with incomes between $5,000 and $15,000.

Several comparisons can be made between Kentucky brick yards in general and brick yards in Louisville in 1870, utilizing information from the Census of Manufacturing (United States Federal Census 1870). Kentucky brick yards in 1870 had between $5 and $30,000 of capital invested (Hockensmith 2002:78), while Louisville brick yards had between $500 and $30,000 of capital invested. Most Kentucky operations had between $1,000 and $6,000 of capital invested, while most Louisville yards had between $1,000 and $6,000 in capital. The labor force for Kentucky brick yards ranged from 2 to 28 male employees (most had 3 to 15 males), 1 to 6 children, and

a few females. The Louisville employees ranged from 5 to 28 male employees (most had 12 to 17 males) and 1 to 6 children (most had 4 to 6 children). Annual wages for Kentucky brick yards varied from $100 to $8,000. The small yards paid between $100 and $800 annually, the majority of the yards between $1,000 and $5,400 annually, and four large yards between $7,500 and $8,000 (Hockensmith 2002:78). In Louisville, yearly wages ranged between $1,000 and $8,000 with most yards spending between $2,000 and $5,400. For the first time, the 1870 Census records provided information on the months of operation. Most brick yards were seasonal businesses. In Kentucky, the majority of the brick yards operated only six months per year (Hockensmith 2002:78). One yard operated year-round, while others were open for business between two and eight months annually. Louisville brick yards were operating between five and seven months per year, but most yards only operated six months annually.

Raw materials used by brick makers primarily included fuel and clay. In 1870, all but one brick maker (who used coal and wood) used wood for burning their bricks. The statewide quantity of wood used annually ranged between 20 cords and 1,500 cords (Hockensmith 2002:78). Louisville brick producers used between 200 and 1,000 cords of wood per year. Wood values fluctuated greatly with the same number of cords selling for substantially different prices. This may have been due in part to the brick yard's proximity to available forests or high transportation costs associated with hauling wood a long distance. Annual expenditures for wood in Kentucky varied from $135 to $4,500 (Hockensmith 2002:78). Louisville brick yards spent between $800 and $4,050 for wood annually with most wood selling for $3.00 to $4.50 per cord (most $4.00 to $4.50 per cord). Sums spent on clay by Kentucky brick yards ranged from $52 to $1,225 annually (for 250 to 3,000 loads) (Hockensmith 2002:78). In Louisville, clay costs for 1870 ranged from $250 to $700.

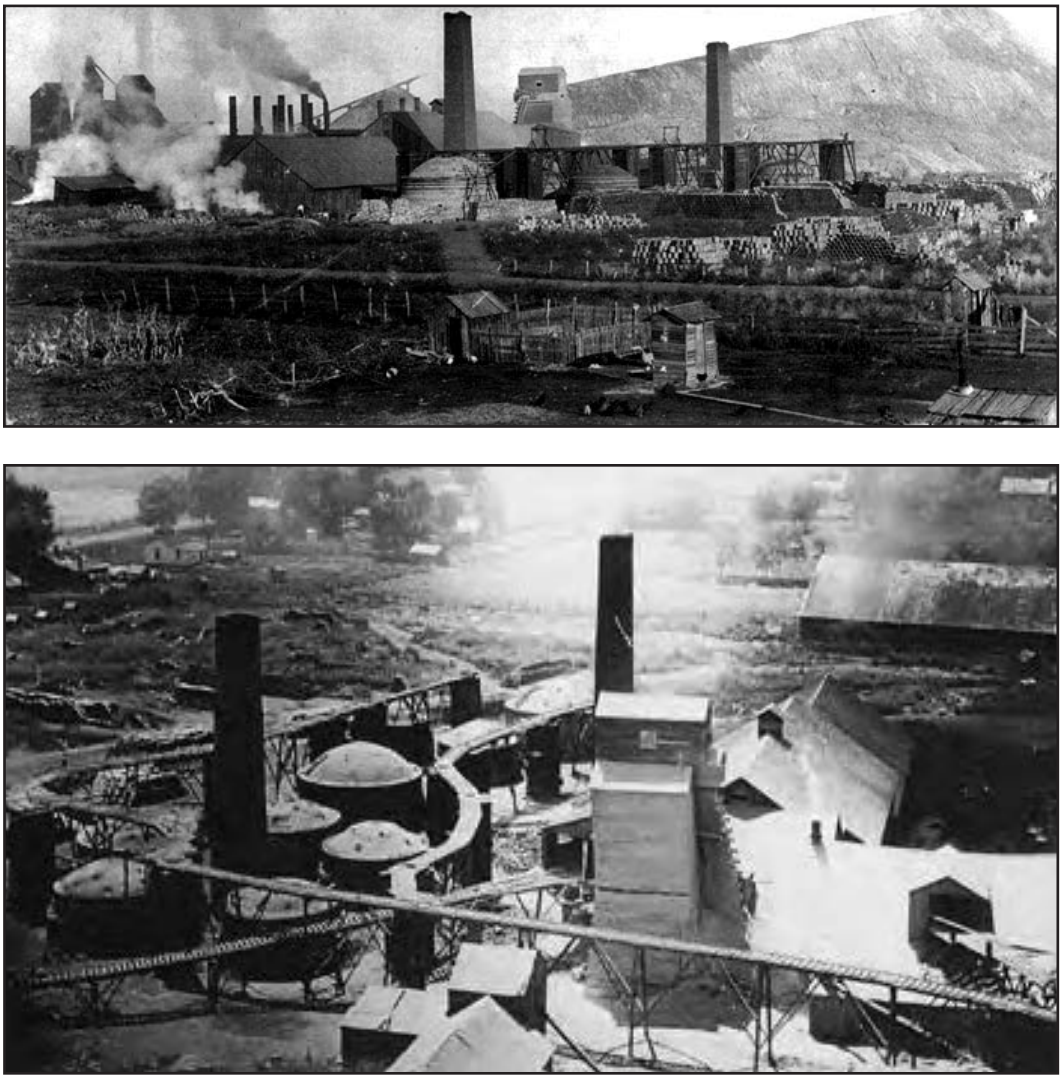
Brick production figures in 1870 varied greatly. Brick yards in the state as a whole produced between 3,000 to 3,000,000 bricks per yard (United States Federal Census 1870). Over half the brick yards were making between 80,000 and 700,000 bricks annually. The remainder of the yards were producing between 1,000,000 and 3,000,000 bricks each (Hockensmith 2002:78). Louisville brick yards produced between 1,000,000 and 3,000,000 bricks annually, but most yards made between 1,000,000 and 2,000,000 bricks a year. Kentucky brick prices ranged in value from $5.00 to $12.50 per thousand with $5.00 and $6.00 per thousand being the most common prices charged by brick yards (Hockensmith 2002:78). Louisville brick yards charged between $5.00 to $7.91 per thousand with $6.00 per thousand being the most common prices charged by brick yards. In terms of annual earning during 1870, Kentucky brick yards ranged from $550 to $18,000 (most earning selling between $2,000 and $12,000). In Louisville, brick yards earned between $6,000 and $18,000 (most earning selling between $6,000 and $12,000).

In order to develop a better understanding of the Louisville brick industry between 1860 and 1870, additional research is needed. A variety of archival resources are available for researching the brick industry (Hockensmith 2001b:14-17). A comprehensive search of the U.S. Population Census records on microfilm for 1860 and 1870 would yield much additional information. These records would provide data on the employees of the many brick yards (see Hockensmith 2001b:15). Also, these records would yield information on their ages, place of birth, families, and personal wealth. Unfortunately, these hand written records are only available on microfilm and require much effort to search through. Since they are very extensive, genealogists have been reluctant to transcribe them and publish them in book form. Likewise, a search of Louisville newspapers should produce many ads related to the brick yards and perhaps some news items (see Hockensmith 2001b:17). Deeds and other local records may reveal information on the ownership and lease of brick yards. Early maps represent another source that may show the precise locations of some early brick yards in Louisville (see Hockensmith 2001b:17). Finally, as urban archaeology is undertaken in more areas of Louisville that once contained brick yards, archaeologists can watch for buried

remains associated with these industrial sites. The archaeological remains of these brick yards would afford the opportunity to study kiln construction and to study samples of bricks produced at these yards. By utilizing all the available avenues of research, we can develop a better understanding of Louisville's brick industry between 1860 and 1870.

ACKNOWLEDGMENTS

The author wishes to express his gratitude to those who have provided assistance in this research. Thomas N. Sanders, former Manager of the Site Protection Program at the Kentucky Heritage Council, allowed the author to undertake some of the Manufacturing Census research used in this article. The staffs of the Kentucky Historical Society Library, the Filson Club Library, and the University of Louisville Library were helpful in providing access to the directories consulted in this study. Ms. Sundea Murphy, editor of *Currents of Change*, kindly welcomed and encouraged the preparation of this article. The author's wife, Susie Hockensmith, read this article and made some useful comments. The contributions of each of these individuals are greatly appreciated.



TYPICAL SCENES AT A BUSY BRICKYARD CA 1890.

(Photo courtesy of Dave Uphoff and www.MinonkTalk.com)

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AN EARLY NINETEENTH CENTURY ARCHAEOLOGICAL INVESTIGATION IN HARRISON, VIGO COUNTY, INDIANA

BY

DONALD B. BALL
LOUISVILLE, KENTUCKY

In the process of searching for early and little known sources concerning archaeological studies within the region, it was refreshing to encounter two small but informative items which afforded new insights into the perspectives and studies of a previous century. Written in an era rife with rampant speculation and blatant conjecture (cf. Haven 1856; Silverberg 1968), the first of these - a brief letter to the editor (Anonymous 1815) published in the May 1815 issue of *The North American Review and Miscellaneous Journal* - would ultimately prove to be prophetic in its ramifications for the advancement of archaeological (in marked contrast to purely antiquarian) investigations. As insightfully noted by this unidentified writer:

> TO THE EDITOR.
>
> SIR,
>
> I wish to propose an undertaking to the publick, which I hope some of our learned societies or liberal individuals may be disposed to prosecute. This is to explore those ancient entrenchments that are found in the western states, more effectually than has yet been done. All the speculations upon them, that I have seen, are founded on an examination of their superficial state. I have never heard of any attempt to search below the surface. It is very probable, [pg. 22] if a trench five or six feet in depth were dug across them in different directions, or if some of the mounds near them were opened, that some remnants of tools, of warlike or domestick instruments, fragments of earthen vessels, &c. &c. might be discovered, that would at once decide the problem, by whom they were constructed. It is impossible that the people who are able to construct such extensive works, should not have possessed a variety of tools, and utensils of various descriptions; and it is extremely probable that fragments at least of these might be found if a civilized people had any thing to do with them, coins might perhaps be discovered. The expense of a very thorough investigation would be trifling. Five or six labourers skillfully directed for a week, would at least be sufficient to shew whether any light could be thrown on the origin of these antiquities, by making excavations. Perhaps the Antiquarian Society recently established here, may think this proposal worth their attention; or that the Historical Society would add to the valuable services they have rendered to the publick, by directing an effort of this nature to be made.
>
> Boston A. B.

Although formal, controlled excavation was certainly not a new concept as demonstrated by Thomas Jefferson's (1964 [1785]) study of mounds in Virginia, this approach was clearly in need of implementation in the "tumuli" of the western territories. While it cannot be demonstrated that the specific suggestions espoused by Anonymous (1815) were taken to heart, soon thereafter the following notice (Anonymous 1817) was published concerning archaeological excavations at a series of Mississippian era mounds in the town of Harrison, Indiana:

Indian Antiquities. - The following account, which we take from the Western Gazetteer, adds something to our former knowledge of those hitherto inexplicable wonders, that are found in such abundance in our western country. We have not room to examine any of the speculations, which have entered the heads of our philosophers and antiquarians on the subject; and if we had, we should hardly expect, where all is conjecture and uncertainty, to afford much amusement or profit to our readers. There is something, however, extremely curious in the inquiry itself; although we cannot hope, that any very important or certain results can be drawn from the few facts, which have as yet been given to the world. We can safely infer from them nothing more, than that this immense tract [pg. 137] of country, which has every mark of having been for centuries past a desolate wilderness, has been thickly inhabited at some former period by a warlike people, who had made much greater advances in the arts of civilized life, than any of the aboriginal inhabitants of North American, who have been known since its discovery by Europeans. The mounds described below are situated in the town of Harrison, Indiana Territory.

'We examined from fifteen to twenty. In some, whose heights was from ten to fifteen feet, we could not find more than four or five skeletons. In one, not the least appearance of a human bone was to be found. Others were so full of bones, as to warrant the belief, that they originally contained at least one hundred dead bodies; children of different ages, and the full grown, appeared to have been piled together promiscuously. We found several scull, leg and thigh bones, which plainly indicated that their possessors were men of gigantic stature. The scull of one skeleton was one fourth of an inch thick; and the teeth remarkably even, sound and handsome, all firmly planted. The fore teeth were very deep, and not so wide as those of the generality of white people. Indeed, there seemed a great degree of regularity in the form of the teeth, in all the mounds. In the progress of our researches, we obtained ample testimony, that these masses of the earth were formed by a *savage people*. Yet, doubtless possessing a greater degree of civilization than the present race of Indians. We discovered a piece of glass weighing five ounces, resembling the bottom of a tumbler, but concave; several *stone axes*, with grooves near their heads to receive a withe, which unquestionably served as a helve; arrows formed from flint, almost exactly similar to those in use among the present Indians; several pieces of earthern ware; some appeared to be parts of vessels holding six or eight gallons; others were obviously fragments of jugs, jars, and cups: some were plain, while others were curiously ornamented with figures of birds and beasts, drawn while the clay or material of which they were made was soft, and before the process of glazing was performed. The small vessels were made of pounded or pulverized muscle shells, mixed with an earthern or flinty substance, and the large ones of clay and sand. There was no appearance of *iron*; one of the sculls was found pierced by an arrow, which was still sticking in it, driven about half way through before its force was spent. It was about six inches long. The subjects of this mound were doubtless killed in battle, and hastily buried. In digging to the bottom of them we invariably came to a stratum of ashes, from six inches to two feet thick, which rests on the original earth. These ashes contain coals, fragments of brands, and pieces of *calcined bones*. From the quantity of ashes and bones, and the [pg. 138] appearance of the earth underneath, it is evident that large fires must have been kept burning for several days previous to commencing the mound (emphasis in original).

'Almost every building lot in Harrison village contains a small mound; and some as many as three. On the neighbouring hills, northeast of the town, is a number of

> the remains of stone houses. They were covered with soil, brush, and full grown trees. We cleared away the earth, roots and rubbish from one of them, and found it to have been anciently occupied as a dwelling. It was about twelve feet square; the walls had fallen nearly to the foundation. They appeared to have been built of rough stons [sic], like our stone walls. Not the least trace of any iron tools have been employed to smooth the face of them, could be perceived. At one end of the building, we came to a regular hearth, containing ashes and coals; one which we found [contained] the bones of eight persons of different ages, from a small child to the heads of the family. The positions of their skeletons clearly indicated, that their deaths were sudden and simultaneous. They were probably asleep, with their feet towards the fire, when destroyed by an enemy, an earthquake, or pestilence.'

Although the author clearly places these mounds in the settlement of Harrison, locating this community without input as to the county in which it was situated tended to be an adventure in its own right. Discounting the almost remarkable total of twenty-four townships and one county named Harrison scattered about the Indiana countryside, both DeLorme (2000:42) and the US Geological Survey (cf. website accessible at <http://geonames.usgs.gov/>) list only one populated place in the state with this name. According to both of these sources, the settlement of Harrison is situated on the west bank of the Wabash River in Vigo County, Indiana, just north of Terre Haute (**Figures 1-2**).

Despite the inevitable and lamentable lack of detail presented in this brief account, it is particularly significant for two reasons. The first is that this early description may well represent the only record of the contents of a substantial number of now long destroyed mounds. The second - and perhaps not so obvious - reason is that these mounds were associated with a much larger prehistoric settlement and sizable portions of the related village area are likely yet intact and awaiting further study. Despite its brevity, early accounts such as this should not be arbitrarily dismissed as being of little value by modern archaeologists.

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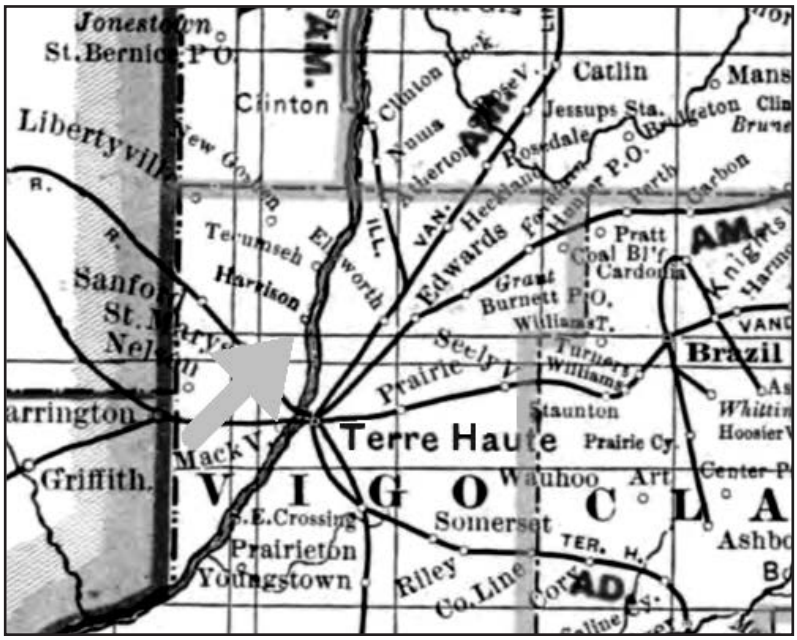

FIGURE 1. FROM GEORGE CRAM'S 1883 INDIANA MAP.

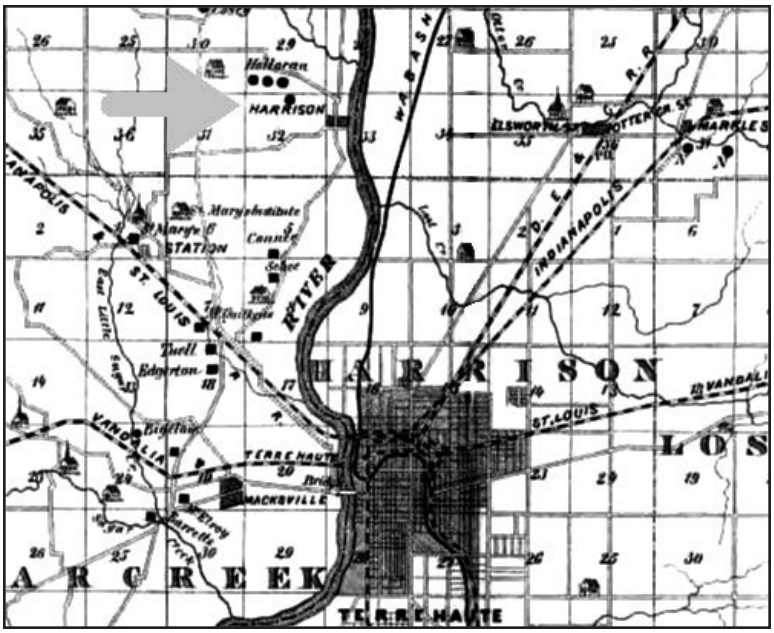

FIGURE 2. FROM E. T. COX'S 1875 GEOLOGICAL MAP OF VIGO COUNTY, INDIANA.

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ARCHAEOLOGY DAY 2005

Sponsored by the Falls of the Ohio Archaeological Society (FOAS) and the Indiana Department of Natural Resources (IDNR), the 2005 Archaeology Day at the Falls of the Ohio Interpretive Center in Clarksville, Indiana had the highest attendance ever!

Our society strives to educate the public about the prehistory and history of the Ohio Valley region and this event is the highlight of our year. The IDNR at the Interpretive Center has given us the opportunity and perfect public venue for hosting this event, targeted at capturing the interest of elementary school-aged children. The lecture series offered in the afternoon has continued to enlighten the older crowd about local archaeological activities.

The outdoor exhibit stations primarily represented various aspects of the ancient Native American way of life, but other archaeological information was exhibited as well. A FOAS member or IDNR representative was at each of the twelve stations to inform the public about what was being demonstrated. The stations included: 1) a mock archaeological excavation, 2) stratigraphy of an archaeological site, 3) pottery making, 4) corn grinding and nut cracking, 5) hide scraping and leather working, 6) wood working and drilling, 7) atlatl throwing, 8) flint knapping, 9) ancient Native American games, 10) artifact identification by archaeologists Steve Mocas, Perry Harrel, and Noel Justice, 11) prehistory and early history of the Falls of the Ohio area, and 12) dinosaur and fossil information.

Our special guest speaker this year was Noel Justice, curator of the Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington (**Figure 1**). He presented an interesting public lecture entitled, "The Importance of the Falls of the Ohio Area in Regional Prehistory."

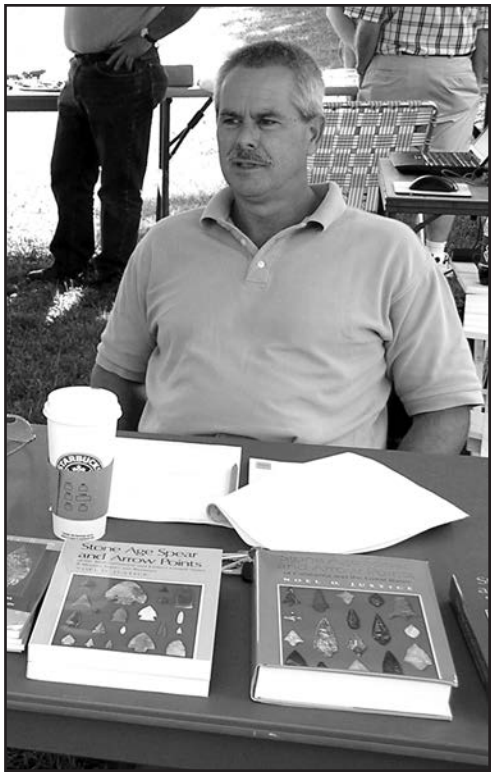


FIGURE 1. NOEL JUSTICE, SPECIAL GUEST SPEAKER AT ARCHAEOLOGY DAY 2005.

STATION 1 - MOCK DIG

A. NANCY THOMPSON
B. PAUL OLLIGES

STATION 2 - STRATIGRAPHY

C. DON MCDONOUGH

STATION 3 - POTTERY MAKING

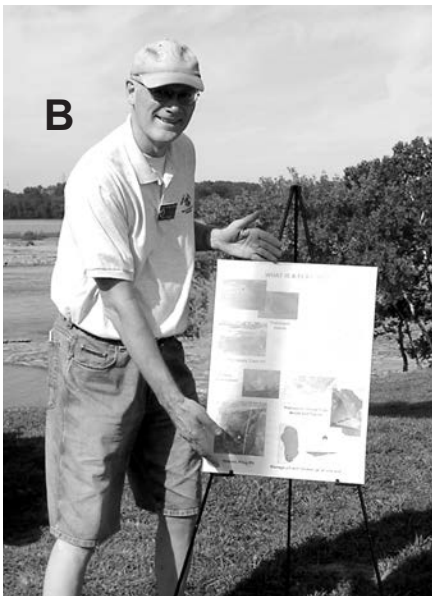
D. ANNE BADER

STATION 4 - CORN GRINDING AND NUT CRACKING

E. LESLIE RUMBLEY
F. KELLY ROGGENKAMP

STATION 5 - HIDE SCRAPING AND LEATHER WORKING

G. CHRIS KOKOJAN
H. TONY PEAKE
I. RICK HARDIN



STATION 6 - WOOD WORKING AND DRILLING

J. ROBERT DE MENT

STATION 7 - ATLATL THROWING

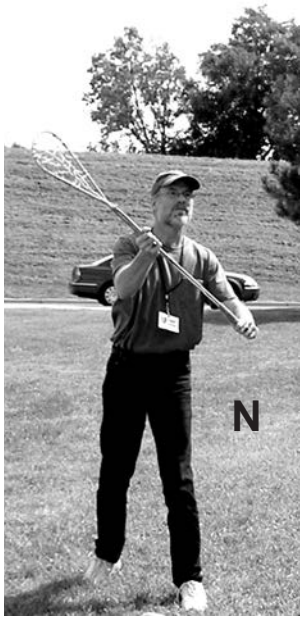
K. RICH LYONS

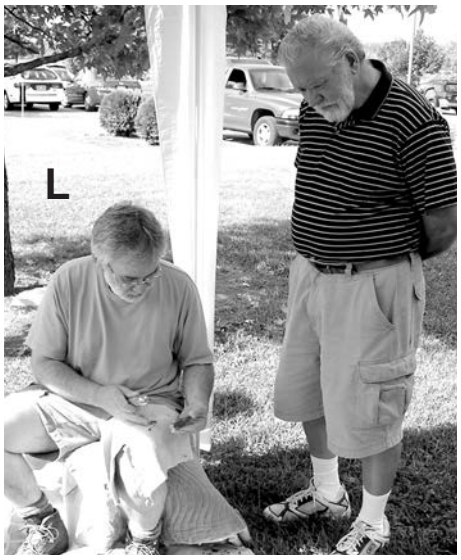
STATION 8 - FLINTKNAPPING

L. GEORGE NALL
M. "RED" WYNN

STATION 9 - ANCIENT INDIAN GAMES

N. CREWS MCCULLOUGH





STATION 10 - ARTIFACT ID AND DISPLAYS

O. NOEL JUSTICE
P. STEVE MOCAS
Q. PERRY HARRELL
R. JIM ALLGOOD
S. MARK MILLINER
T. ADRIENNE HARDESTY
U. KATHY GETSINGER

STATION 11 - PREHISTORY AND EARLY HISTORY AT THE FALLS

STATION 12 - DINOSAURS AND FOSSILS

V. BETT ETENOHAN

REFRESHMENT STAND

W. BARB DE MENT
X. CHRIS DE MENT

CARTER COUNTY, KENTUCKY CHERT RESOURCES AND ABORIGINAL UTILIZATION

BY

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Carter County lies in the northeastern part of Kentucky and is located about 52 kilometers (km) (35 miles (mi)) south of the Ohio River (**Figure 1**). It may be viewed in total on the USGS Morehead 30 x 60 minute series (1:100,000 scale) topographic map. Seven 1:24,000 topographic maps cover the majority of the area of this research in the county: Wesleyville, Tygarts Valley, Oldtown, Soldier, Olive Hill, Grahn, and Grayson (**Figure 2**). Details reported in this article are generally covered by Wesleyville, Tygarts Valley, Olive Hill, and Grahn quadrangle maps. Reference to archaeological sites along the Little Sandy River is covered by the Grayson quadrangle map. The Kentucky Geological Survey refers to this region as the *Cumberland Plateau* and *Eastern Coal Fields* and indicates that the rocks are composed of Pennsylvanian and Mississippian age sandstone and limestone. Tygarts Creek dissects the county and basically forms the demarcation of the exposed chert outcrops or deposits. To the east of Tygarts Creek, there is very little exposed chert. Also, to the north, exposed chert outcrops diminish beyond the east/west flowing segment of Buffalo Creek.

Chert outcrops abound in the central and western areas of Carter County, Kentucky. There are two predominant types of chert and one more scattered type, with their identification based on the geological formations in which they are found. The Upper Newman Formation contains the most commonly distributed chert type that is called *Haney*. The Lower Newman Formation contains three types of chert, but only two have been observed: *Paoli* and *St. Louis*, with Paoli being the most commonly observed type (U.S. Geological Survey 1972).

The Haney chert is described as being *oolitic* (Garland R. Dever, personal communication, April 2005; Tankersley 1989:281); however, during this review, chert outcrops have been observed that contain apparently non-oolitic varieties (see **NOTES**). In fact, the apparently non-oolitic varieties may be more common than the oolitic types. These apparently non-oolitic varieties may have resulted in confusion causing possible identification as Paoli (Garland R. Dever, personal communication, October 1991). Also, this misidentification has lead to the misnaming of apparently non-oolitic Haney and Paoli as *Carter Caves* chert (Converse 1972, 1992; Fowke 1902:625-626; Tankersley 1999:287; Kent D. Vickery, personal communication, February 2002). There are no outcrops of Paoli (Lower Newman) chert at Carter Caves.

Native Americans visited the county and utilized the abundant chert resources for many thousands of years. Chert associated with Carter County has been identified at numerous sites in Kentucky and Ohio. Fowke (1928) indicated the occurrence of Native American “mining” of the chert resources in the northwestern area of the county between Smith and McGlone Creeks (side branches of the Buffalo Creek). Both the Haney and Paoli types represent the chert he detailed. He gave a description of the diversity of colors represented by red, brown, yellow and gray and indicated that the chert had a “luster peculiarly its own” (Fowke 1894:333). This is suggestive of Paoli chert; however, some Haney varieties produce a similar luster when freshly exposed, though most dull with time.

The ridge that begins at Buffalo Creek and extends west from Carter, Kentucky (Carter City) contains numerous prehistoric archaeological sites. At 15CR45 a pipeline dissects the ridge and both Upper and Lower Neuman chert types are apparent. To the east, along the ridge, is an accumulation of chert shatter, flakes, blanks, hammer stones, and broken bifaces that

extends from 15CR45 to an existing limestone quarry. This one-kilometer stretch (about .75 mi) has considerable evidence of having been a prehistoric chert resource for many thousands of years. The expansion of the limestone quarry, especially since 1995, has destroyed many of the identified sites.

Chert nodules unearthed by modern quarry operations are exceptional examples of the Paoli and apparently non-oolitic Haney types of chert found in the county. Massive amounts of lenticular Haney chert have also been disrupted by modern quarry activity. Most of the observed Haney chert found in this area is the lenticular oolitic type, but some nodules that contain rare oolites are present. In addition, much of the weathered chert observed in this area has a granular or pitted texture. A brown, apparently non-oolitic variety is observed where the pipeline crosses (north-south) the ridge near 15CR45.

FIGURE 1. CARTER COUNTY POSITION.

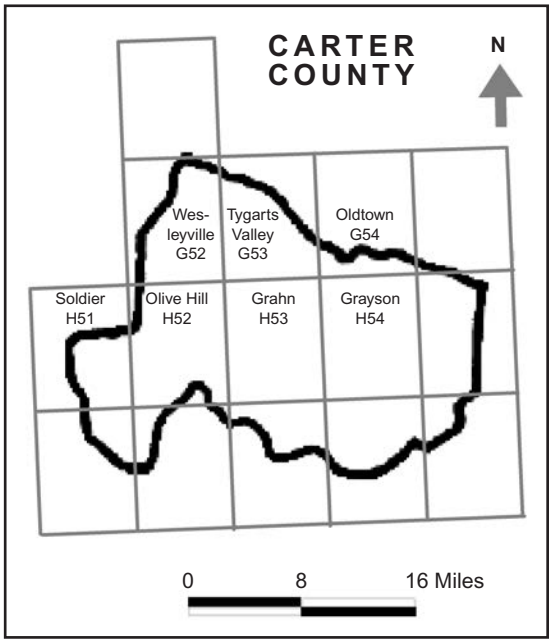

FIGURE 2. CARTER COUNTY QUAD MAPS.
(Kentucky Geological Survey 2001)

Review of the major and some minor creeks in the county has indicated the presence of a large amount and variety of chert. The most abundant creek-associated chert was found in the Smokey and Buffalo Creeks. Much of the chert in these streams has minimal patina and looks “fresh.” The method used to study the creek-associated chert was to measure several 1-m^2 areas, collect and count all the exposed chert (on the surface) and then assess the potential for use in making tools. Also, the chert was examined to determine if had been altered by human activity, if altered pieces had been utilized in some way, and to determine the chert type or variety of local types. **Table 1** provides a summary of the findings.

Wolfpen Creek runs on the west side of a ridge where an abandoned early 1900s stone quarry is located. Samples from this quarry suggested that some of the chert in the Wolfpen Creek was of the same Haney variety as observed in the quarry. However, several other Haney varieties were present in the upper layers of the quarry. Color variations ranged from light gray, light brown, rust brown, and deep red. All the chert observed was in the form of nodules that ranged in size from 4.0-6.0 cm (1.6-2.4 in) to oblong nodules that were over 30.0 cm (11.8 in) in length. One rust brown nodule that was fairly large demonstrated the presence of masses of sponge spicules. Fossils were observed in some nodules, but not in all. One variety was very oolitic, but the others only had a few oolites or none at all.

The largest and most extensive outcroppings of chert are along the James Branch Creek, which is located in the central part of the county. Evidence associated with numerous local chert tool collections suggests that the James Branch chert varieties (there are at least 11) may have been the most frequently used Haney chert within the central and eastern part of the county. Evidence in rock shelters immediately adjacent to these outcrops suggests very extensive use of the chert. Review of collections that were associated with each of the rock shelters has demonstrated use of this chert from the Early Archaic through the Late Woodland periods. If these collections may be used to indicate frequency of use by specific pre-historic visitors, the Early Woodland period is most commonly suggested.

TABLE 1. CHERT ASSESSMENT OF STREAM DEPOSITS IN CARTER COUNTY, KENTUCKY

Creek	Total Chert	Test Sq.	Usable	Altered	Artifact Type	Chert Type
Buffalo	25-78	6	15-46	3-9	BF, C, F, FK, FS	90% H, P
Buffalo	22-37	3	9-13	1-2	FS	H
Tygarts	19-27	3	13-15	0-3	C, FS	H
Wolfpen	23-27	2	9-14	4-5	F, FS	H
Smokey	19-24	4	8-12	2-7	BF, C, F, FK, FS, HS	80%H, P, SL (1)
Erwin Hollow	26-45	2	7-12	4-7	F	H
Kiser Hollow	22	1	10-12	4	FS	H
Cave Branch[a]	150+	5	90+/-	50+/-	BF, C, F, FK, FS, HS (igneous)	85% H, P, Other 5%

BF = biface (broken), C = core, F = flake, FK = flake knife, FS = flake scraper, HS = hammer stone, H = Haney chert, P = Paoli chert, SL = St. Louis, Other = unknown or unfamiliar local variety

The Buffalo Creek samples were collected near the confluence with Brushy Creek. The samples in Tygarts Creek were collected .5 km (.3 mi) down stream from the Route 182 bridge. The Smokey Creek samples were about .2 km (.1 mi) upstream from where Smokey Lake begins (on CCSP property) and the Erwin Hollow Creek samples were collected about 90 m (295 feet (ft)) from the confluence with Smokey Creek. The Wolfpen Creek samples were collected .2 km (.1 mi) north of Route 474. The samples reviewed in the Tygarts Creek had a deep rust colored patina suggesting a long-term exposure to the elements/creek. All the other creek samples had a minimal to moderate patina.

[a] 5-m long sample sites were used in this review

OBSERVATIONS

The color ranges of the Haney chert varieties extend from almost clear to pure white to a grainy black. Gray, gray-brown, red-brown, red, dark brown and mixtures of colors are common, especially along the James Branch. Round or oval oolites are observed in the cortex of most of the lenticular varieties of Haney, but may be rare in some nodules. With the exception of very scattered *relict bodies* (fossil remnants), the dark brown or red-brown Haney varieties may be easily mistaken for Paoli. The presence of these relict bodies may serve as a distinguishing trait when comparing Haney and Paoli chert. Fossils abound in some of the Haney varieties and some look to be masses of compressed fossils similar to Brassfield chert found in Silurian outcrops on the AA highway east of Maysville, Kentucky.

Another interesting trait of most of the Haney varieties is that weathering results in a white patina. Paoli chert does not produce this white patina and maintains a “waxy” appearance, even after long exposures to the elements. There may be an exception and that occurs with some dark brown, red, and red-brown Haney nodules. These do not produce the white patina to the same extent

as other varieties, and they may have the waxy characteristic at least in parts of a sample. A five-year exposure study conducted using Cincinnati area weather conditions demonstrated that some Haney varieties rapidly developed a dulling surface characteristic, while the Paoli seemed to be unaltered. Obviously, this was a short-time exposure as compared to chert that has been associated with pre-historic occupations; however, it pointed out that most Haney varieties weather more rapidly than the Paoli chert. A parallel weathering study, directly associated with some outcrops along the James Branch Creek, demonstrated the same rapid weathering of Haney varieties.

Another trait that seems to be common among the lenticular Haney chert is a “pitting” that occurs after weathering. These pits may range from those easily observed without magnification to those that require at least a 10X magnification to detect the pits. The pits may have resulted from the erosion of minute fossil fragments or fractured oolites. The chert deposits in Carter County are caused by limestone replacement (calcium carbonate replaced) by silicon dioxide. Thus, the fossils contained within the limestone may remain as intact casts or remnants (relict bodies) after the replacement has occurred. Exposure to five percent acetic acid (vinegar) for several hours will produce pitting in many Haney varieties. The exception is the deep red and some brown varieties that occur in Carter Caves Park. However, exposure to five percent (+/-) carbonic acid has produced pitting in most Haney varieties.

There is another type of chert that has been observed in Lower Newman limestone in close proximity to Paoli chert. It is St. Louis chert and was found in “dinosaur egg” shaped nodules. They had a thin gray cortex and presented a greenish-gray chert with pink bands. Only one outcrop of this chert type has been located to date, even though the geological formation in which it should occur is exposed in several areas of the county. This chert is very hard and has only a minimal luster. This outcrop is roughly in the center of the county on a 35-m (115-ft) high bluff above the Tygarts Creek.

To date, no St. Genevieve chert has been observed in outcrops. Its presence is suggested in crushed limestone that has been removed from a limestone quarry located at the east end of Olive Hill on Route 60. A deep charcoal gray to black chert has been observed in the crushed limestone gravel dumped on various roads in the area. All of this gravel had come from the Olive Hill quarry. Examination of crushed limestone gravel from the quarry west of Carter City has not demonstrated any of this dark chert. Only a brown and red-brown variety of chert has been observed in this gravel.

CARTER CAVES

There are two park areas that are managed as Carter Caves. The older Carter Caves Resort Park is the most frequented and well-known and has mistakenly been associated with the naming of Paoli chert from the county. The second area is the Cascade Caves Park, and it lies to the south of the much larger Resort Park. Chert outcrops occur in both parks, with the more diverse outcrops occurring in the Resort Park. Nodule formations are most common and some of these are the apparently non-oolitic varieties of Upper Newman/Haney chert. The dark brown, deep red, and dark gray-brown varieties may have been associated with the misidentification as Paoli, since oolites are rare or not apparent in all segments of the same sample from an outcrop. Also, some of these have a low frequency of relict bodies. When first obtained from the outcrop, they may have the higher luster associated with Paoli, but weathering may dull this luster. Fowke (1902) made the first association of Carter Caves with chert from Carter County in his review of chipped implements found in Ohio.

Native Americans utilized all of the chert types found within the Resort Park with some varieties seemingly preferred. A gray chert, which occurs as both nodules and lenses, is the most commonly found chert associated with a very large archaeological site in the park. The chert

occurs adjacent to the site and evidence of quarry activity is apparent at and around the currently exposed outcrops. Another multi-colored "striped" lenticular chert variety was also rather commonly used, but may have required excavation of soil to gain access to the outcrop. This outcrop is only observed when trees are uprooted or after very heavy rain and erosion.

An interesting point is that the most commonly used chert within the resort park is associated with ancient open habitation sites and is rarely found in the numerous rock shelter and cave sites within the park. The opposite situation occurs in the Cascade Caves Park area. All but one of the chert outcrops observed within this park had exclusively been used in rock shelter and cave sites. The reason for this must be related to where the outcrops occur. In the Resort Park, none of the chert outcrops are actually within a rock shelter or cave, while in the Cascade Cave Park all of the outcrops are within rock shelters. In fact, one very large multi-layer outcrop of an apparently non-oolitic brown and gray-brown Haney chert occurs in the largest shelter in the park. The chert from these outcrops is found widely distributed in both rock shelter and open habitation sites in the area surrounding the Cascade Cave Park.

Another interesting fact is that all of the chert outcrops within either the Resort Park or the Cascade Caves Park are of the Upper Newman Haney type. There is no Paoli (the so-called Carter Caves chert) that occurs naturally in either of the parks. Examination of chert samples collected by a number of individuals and identified as Carter Caves has suggested that the apparently non-oolitic Upper Newman Haney type is the cause of the confusion.

Thus, to relate Lower Newman Paoli and Carter Caves as being the same chert is incorrect. To refer to the apparently non-oolitic Upper Newman Haney chert as Carter Caves could be correct; however, the apparently non-oolitic varieties of Haney chert occur in many parts of the county. Thus, to reduce confusion and provide a more accurate indication of where a specific type of chert may have originated, the terms Upper Newman oolitic and apparently non-oolitic Haney and Lower Newman Paoli may be more accurate. Simply calling the chert *Carter County chert* may be a better generic identification.

NATIVE AMERICAN UTILIZATION OF CARTER COUNTY-ASSOCIATED CHERT RESOURCES

A study begun in 1984 has resulted in the identification of well over 282 actual or probable archaeological sites within Carter County. Actually, there is probably at least twice this number, since most of the 23-year study focused on the central Tygarts drainage and reviewed only about one-quarter of the county area. Future study will focus on areas not yet reviewed and some more recently acquired parts of Carter Caves Park that have yet to be surveyed. Reports from county residents have definitely indicated that sites are present in all of the areas that have yet to be reviewed. Formal archaeological site reports have been submitted on only 186 sites and 99 have received a 15CR number. Several sites, however, were combined under one 15CR number. Most are rock shelter or shelter/cave sites. One site is a Fort Ancient village, which is on the Little Sandy River, east of Grayson. A brief survey of fields along this river has suggested that basically all of the area on either side of the river from the south end of the county to the north end had been occupied.

There is no naturally occurring chert within several kilometers (two miles) of the Little Sandy River. All chert outcrops are limited to the Tygarts and Buffalo Creek drainage areas. Thus, those utilizing the areas near the Little Sandy had to obtain their raw material from outcrops to the west in the Tygarts Creek /Buffalo Creek drainage or from other parts of Kentucky or from out of state. A study of chert from three sites along the river near Grayson has suggested that about 40-60 percent of the flakes may be representative of outcrops in Carter County and especially from the James Branch canyon.

To date, at least 78 of the chert outcrops observed in the county had prehistoric utilization to some extent. The most common utilization was directly related to outcrops of chert located in the James

Branch canyon and especially within, or immediately adjacent to, a rock shelter in this canyon. In a few cases, the small outcrop within a shelter was exclusively used only in that shelter. However, the larger outcrops, especially those close to the James Branch, were more widely utilized and distributed. One specific outcrop/quarry located in the canyon segment of the James Branch may have representation in sites along the Little Sandy River, in sites along the Ohio River and in Boone County, Kentucky, near Big Bone Lick. This observation was obtained by microscopic comparisons of weathered chert from the James Branch with the archaeological samples. Chemical analysis may be more accurate, but it is obvious that Carter County-like chert had a wide distribution.

Immediately adjacent to the largest James Branch canyon outcrops there is a large rock shelter that was used as a “work shop” and has a deep chert midden of flakes and chunks. Looters of the site have dug into this midden to a depth of at least .8 m (2.6 ft). Local collectors, who have dug into the site, indicated that “nothing” was found there. However, during a visit to the site with University of Cincinnati archaeology students, a Late Woodland point was found in the back-dirt of site looting. Examination of a large number of chert flakes suggested some of these had been utilized as knives and scrapers.

To provide a better picture of chert resource utilization in the county, a review of some specific sites across the county is provided. In some cases, the sites may be the same as those reviewed by Fowke.

From the south end of the James Branch canyon at a 21-m (70-ft) high falls to the north end, where the stream enters a cave, there are 31 sandstone rock shelter sites and at least five sites on the canyon rim. Four of these have chert deposits within the shelter and the remaining has deposits immediately adjacent to, or just below, the site. All but two or three shelters have been extensively looted. Examination of flakes in the back-dirt of some looted sites has indicated that all but one type of chert is common to the immediate canyon area. The least common chert is a Kanawa Black chert from West Virginia and local collectors have displayed numerous artifacts composed of this chert.

The southern half of the James Branch canyon is privately owned. However, to the north of where the creek enters a cave, the canyon continues and is owned by the State of Kentucky. There are at least 22 sandstone rock shelter sites within this canyon. Of the 22, six have outcrops of chert within the shelter. All have been very extensively looted. A permit was obtained from the office of the State Archaeologist to examine the surface flakes from four of the 22 sites and all of the chert examined microscopically could be associated with the outcrops that occur within the James Branch canyon. Much of the chert was associated with a large multi-layer outcrop at 15CR162 that is the largest rock shelter site on the State Park canyon property.

The next large concentration of sites is to the northeast of the James Branch canyon on private land. The first site studied as part of the initial Carter County review (1984-1989) is on this farm. It had been extensively looted; thus, the study focused on the piles of back-dirt that existed throughout the rock shelter/cave site. All but one of the rock shelter sites on this farm is limestone. There are several outcrops of chert and three types are represented. A very large multi-layer outcrop of Haney is on a high cliff near a deep side branch of Tygarts Creek. At least one of the layers is very similar (macro- and microscopically) to a large outcrop in the James Branch canyon, 3 km (2 mi) to the southwest. Two exposed outcrops of Paoli occur in the vicinity of the above mentioned limestone shelter. A small outcrop of St. Louis nodules also occurs near the same rock shelter. Recently, rather large, frost-fractured nodules of variously colored Haney chert were observed in the northern areas of this farm. Likewise, several layers of nodules were observed in a large sinkhole in a central section of the farm.

A partial review of flakes from the limestone shelter mentioned above has suggested that most of the chert was obtained from the outcrops on the farm. A local collector permitted a review of items he reported to have come from this shelter and there is suggestion that the site was occupied at least from the Early Woodland Period. Artifacts observed in other collections from fields on the farm suggest occupation was from Early Archaic to Late Woodland. The property owner permitted an examination of flakes from the three field sites on the property and over 90 percent could be associated with outcrops on the property. To date, thirteen sites have been observed on this 81-hectare (ha) (200-acre) farm. Sites 15CR88 and 15CR89 had been identified previously on this farm.

To the east of this farm at the top of the north cliff of the Tygarts Creek, is 15CR14, and there is a quarry site there that may have been visited by Fowke (1928). A review of the chert shatter at the site and of the associated chert outcrops indicated the presence of Upper Newman/Haney chert. There is also a somewhat unusual orange-red chert that is present in scattered nodules on the surface of the site. The chert contains relict bodies, but no apparent oolites. Similar nodules were observed in a creek in the Carter Caves Resort Park and on the ridge to the west of Carter, Kentucky (Carter City).

The interesting fact associated with this chert is that macro- and microscopic examination of flakes found at a site near Fort Ancient, in Warren County, Ohio, suggests a match to the orange-red nodules from Carter County. Because of this possible association, Dr. Kent D. Vickery has called the chert from Warren County *Tygart chert* (Fowke 1902). This, however, may not be the best association, since the chert probably originated on the ridge west of Carter, Kentucky.

To the northwest of 15CR14, the chert shatter continues for over 3 km (2 mi) along the cliff top. On the cliff face below this chert shatter area, there are prehistoric and historic Native American pictographs (15CR60). Adjacent to the prehistoric pictographs is a rock shelter/cave that has scattered chert flakes present in the areas where water has eroded the back-dirt of looters. The chert is similar to that found at 15CR14 and above the pictographs.

Continuing north, 7 km (4 mi) or so, to the east cliffs above the Buffalo Creek, there is another quarry site that may have been reported by Fowke (1928). Chert shatter, chunks, flakes, preforms, and cores are scattered over a 1.2-1.6 ha (3.0-4.0 acre) area. All of the chert in the quarry is of the Upper Newman/Haney variety and much of it is apparently non-oolitic. The quarry is on the top of a cliff and an obvious access trail leads down to the base of the cliff revealing a string of small rock shelters and a cave entrance. The cave can actually be traversed from this cliff base entrance to the central area of the quarry/open habitation site on the top of the cliff. On the surface of each of these shelters are flakes and chunks common to the outcrop above. Other chert, probably from the Buffalo Creek (only .2 km or .1 mi to the west), was apparent on some of the shelter floors.

As Fowke noted (1902; 1928), it is obvious that Carter County was a well-utilized resource for a variety of chert that had been distributed widely in Kentucky and Ohio. It is probable that most of the Paoli chert attributed to Carter County came from the 8-km (5-mi) long ridge that is west of Carter City and is bordered by the Smith Branch and Brushy Creeks. All other Paoli outcrops in the county are too small to have produced such a widely distributed resource. The presence of many color and texture varieties of oolitic and apparently non-oolitic Haney chert has definitely produced a widely distributed resource.

A review of an extensive collection of artifacts and flakes collected up and down the Ohio River by an individual who lives in South Shore, Kentucky, has established a distribution of Upper Newman Haney chert to at least 32 km (20 mi) up river from South Shore and to several sites on both sides of the river down stream to Maysville, Kentucky.

Fowke (1902) stated in his report: “This quality enables us to determine the fact that fully nine-tenths of all the flint implements found along the Ohio from the Licking to the Guyondotte are made of the flint from Carter County.” He was possibly making reference to what is now called Paoli, but he may very well have included some of the better quality Haney varieties. Also, discussions with archaeologists who have reviewed river sites in Brown and Clermont Counties in Ohio, have indicated the presence of Carter County-associated chert at those sites. It must be noted that the Licking River drains areas that are within the same Upper and Lower Newman limestone formations common to Carter County. Thus, some of the chert down stream from the Licking River may have been associated with other Eastern Kentucky counties.

There is some evidence to suggest that the ancient Kentucky River that flowed north to Boone County carried chert that, likewise, was associated with the Eastern Kentucky Mississippian limestone that contains Haney and Paoli types of chert. This “high-fluvial” chert was commonly used by Native Americans in northwestern counties along the Ohio River. A study begun 11 years ago in Boone County, Kentucky has suggested that a number of varieties of Upper Newman chert may be deposited in gravels that were associated with the ancient Kentucky River. Many of these chert varieties were extensively utilized by Native Americans and, as a result, could mislead one to assume they carried the chert from very distant outcrops. However, the chert is very common in many areas of Boone County and counties south to the current Kentucky River.

FINAL COMMENT

In 1962, the first visit was made to the archaeological site studied from 1984-1989. At that first visit, it was observed that most of the front section of the site had been extensively looted. The owner indicated that looting began about 1954. In the period 1984-1990, over 180 actual or probable sites had been reviewed as part of this study, and it was estimated that about 84 percent had been severely looted. A review between 1999-2002 has suggested that nearly 98 percent of previously identified sites had been looted. In 1998 alone, one individual who was out of work and was looting sites to find artifacts to sell, destroyed at least 40 rock shelter sites. Site looting in both of the Carter Caves parks has continued. Some sites have demonstrated multiple digging and re-digging in the period 1989-2005.

Many of the Carter County site report reviews were conducted under a grant from the Kentucky Heritage Council (Federal Grant No. 21-93-80135).

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NOTES

Oolites are tiny calcium carbonate spheres/ovals formed during wave action of ancient seas and are frequently incorporated in the cortex and sometimes the matrix of a number of chert types, including those found in Carter County chert outcrops. Examination with a microscope frequently permits the observation of oolites that look like clusters of tapioca (**Figure 3**). However, some varieties of Upper Newman (Haney) chert may not present *obvious* oolites. A rather extensive review of chert from Carter County outcrops has suggested that oolites may be apparent only in some parts of a sample and not in others. Thus, depending on which part of the sample is reviewed, oolites may or may not be observed. It is common to find pieces of chert from the Upper Newman Limestone formation (Haney chert) that *apparently* have no oolites or the oolites are simply not associated with the piece being examined and they are present in the parent material. This is most common in the finer-textured, high-luster, brown, grayish-brown, and red nodules. This apparently non-oolitic chert is common at 15CR162 and in some outcrops at 15CR161 and 15CR223. This is important to note, since chert from these outcrops has a fairly wide use distribution in central Carter County. Likewise, some very high quality Upper Newman chert has been observed along the Quarry Ridge Site (15CR221). Chert from this ridge and similar outcrops nearby may be associated with artifacts found at sites in Ohio and northern Kentucky.

Another interesting fact about oolites is that when broken in half, many look like the cross-section of a hailstone. There are concentric rings with a clear center in many cases (**Figures 4** and **5**). Evidence has suggested that some of the inclusions observed in apparently non-oolitic chert are actually crushed oolites, and the fragments look very similar to what is observed when a hailstone is crushed. Thus, if one is looking for the classic spheres and ovals commonly associated with oolites, they may be misled to conclude that a chert variety or artifact is non-oolitic, since only fragmentary bits of oolites are observed in the chert matrix.

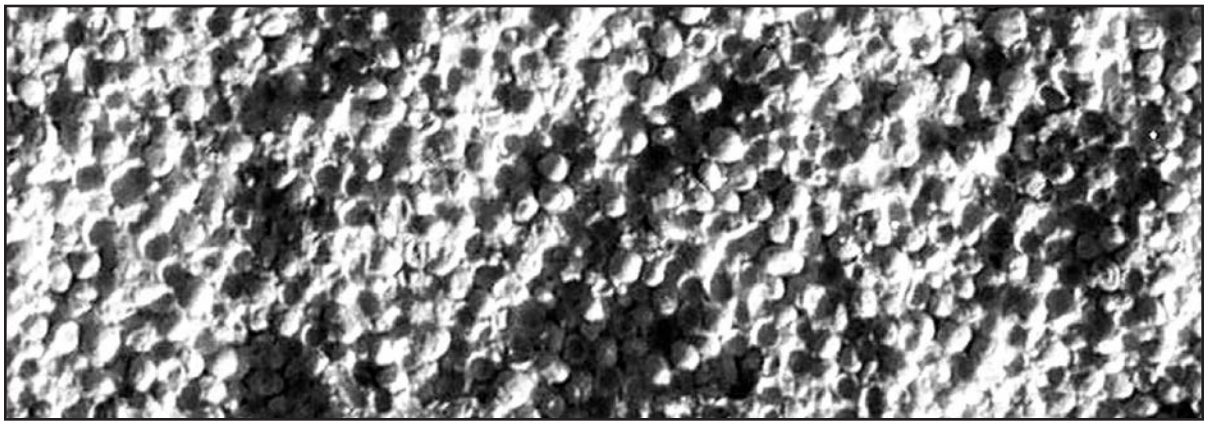

FIGURE 3. OOLITES MAGNIFIED. *OOLITE* IS THE GREEK WORD MEANING *FISH ROE*.

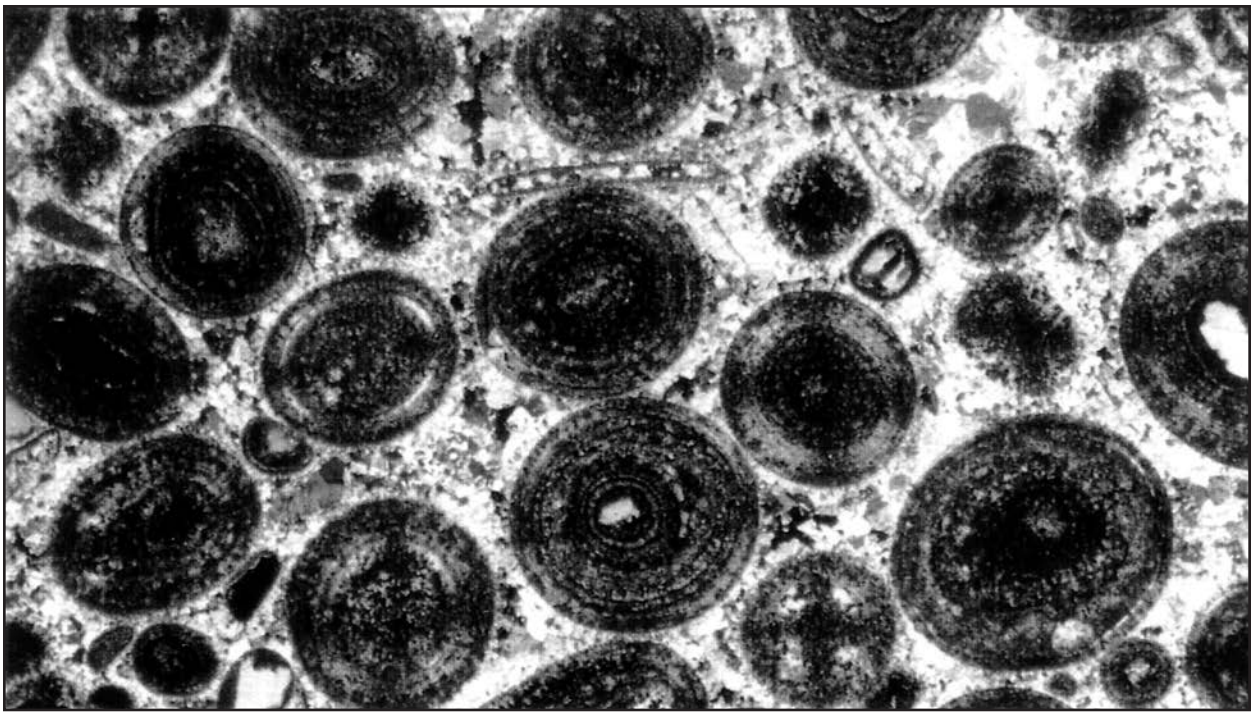

FIGURE 4. MICROSCOPIC LOOK OF WELL-DEVELOPED OOLITE CROSS-SECTIONS.

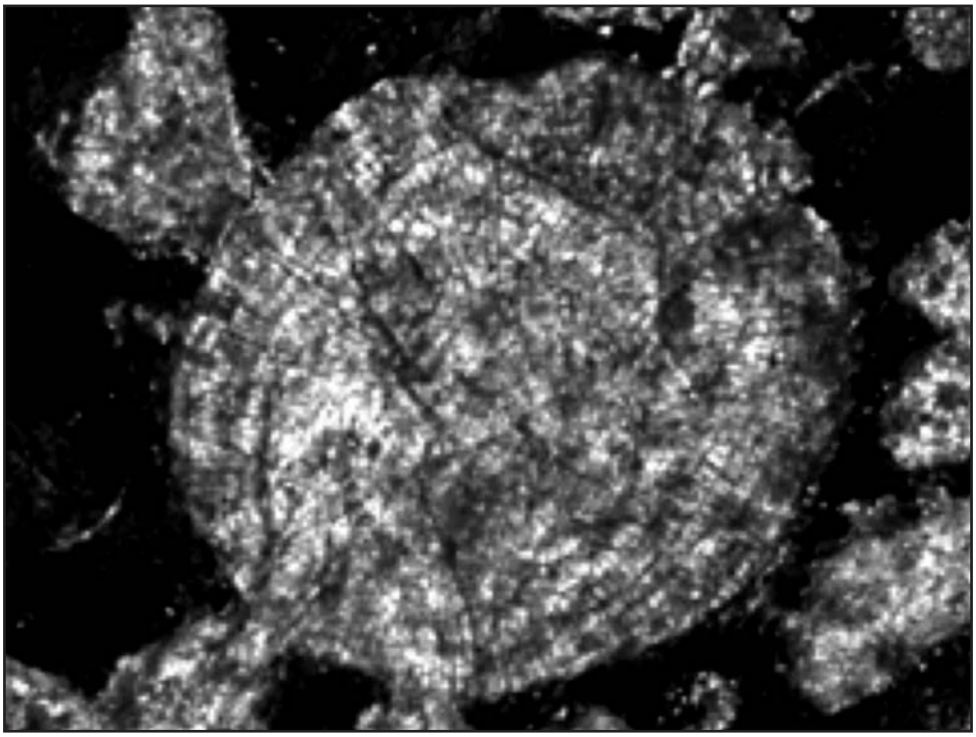

FIGURE 5. HIGHER MAGNIFICATION OF A SINGLE OOLITE.

Oolite photos courtesy of Dr. Ian West of the National Oceanography Centre, Southampton, UK.

THE 2005 CENTRAL KENTUCKY CIVIL WAR HERITAGE TRAIL EVENT AT NEW HAVEN BATTLEFIELD IN LARUE COUNTY

BY

SUNDEA MURPHY
FALLS OF THE OHIO ARCHAEOLOGICAL SOCIETY

Through the efforts of the Rolling Fork Historic Preservation Association (RFHPA) the New Haven Battlefield in LaRue County, Kentucky, was added to the National Historic Register (**Figure 1-2**). This battlefield is the site of the New Haven Battle, in which three companies of the CSA 9th Kentucky Cavalry, lead by the infamous General John Hunt Morgan, attacked the area on December 30, 1862. General Morgan and his troops approached New Haven from the west and brought artillery up to a small hilltop, which was located directly behind the James Howell farmhouse (**Figure 4**). This strategic location offered cover for troop maneuvering and protection from Union return fire. From this location, some of the cannon fire went literally over the top of the house and over the Howell property to reach the intended target. The primary goal was to destroy the Louisville & Nashville Railroad bridge over the Rolling Fork River, but the effort was thwarted by several companies of the 78th Illinois Volunteer Infantry stationed at nearby Fort Allen. From personal accounts, Fort Allen was a stockade located near the bridge (Lemon 2003) (**Figure 3**).

The New Haven site was one of the stopping points of the 2005 Central Kentucky Civil War Heritage Trail (CKCWHT), a week-long event that showcases Kentucky's Civil War history (CKCWHT 2005). Each site on the tour provides interpretation, historical reenactments, and various hands-on activities, all designed to promote heritage tourism in central Kentucky. Visitors at New Haven watched a reenactment of General Morgan's attack of Fort Allen and participated in a public archaeological excavation near the Howell House (**Figures 5-6**). FOAS was there to guide the excavation and to answer questions for the participants.

The excavated unit was in the front of the house, approximately two meters (about seven feet) east from where the old porch extended. As the excavation progressed, pieces of crock and glass and the remnants of a brick-lined walkway were uncovered (**Figures 7-8**). Unexpectedly, a few Archaic projectiles and some flint debitage were recovered close to the level of the walkway, from the upper 10-20 centimeter (approximately 4-8 inch) levels (**Figure 9**). An explanation for the artifacts' appearance was offered by former residents of the Howell House. They told FOAS members that as children, they collected artifacts from the hill behind the house. They said it was very likely the artifacts were taken into the yard and left there as they played. The collected artifacts are being processed, and a full report will be issued in the near future.

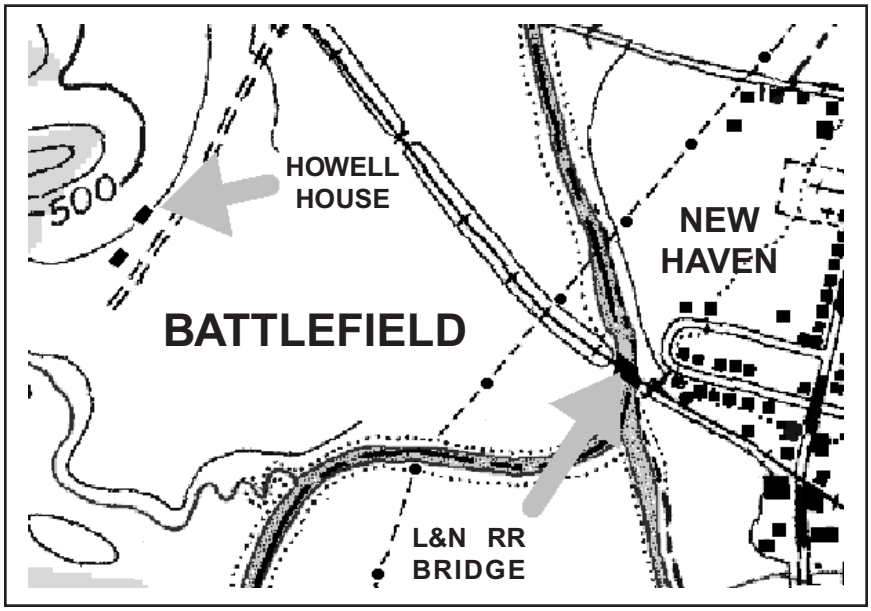

FIGURE 1. NEW HAVEN BATTLEFIELD, LARUE COUNTY, KENTUCKY.

FIGURE 2. IN APRIL OF 2004, RFHPA MEMBERS EXCAVATED SEVERAL UNITS AROUND THE FRONT PORCH AREA AND ALONG THE NORTH SIDE OF THE HOUSE. A UNION UNIFORM BUTTON WAS RECOVERED AT THAT TIME.

(RFHPA 2004)

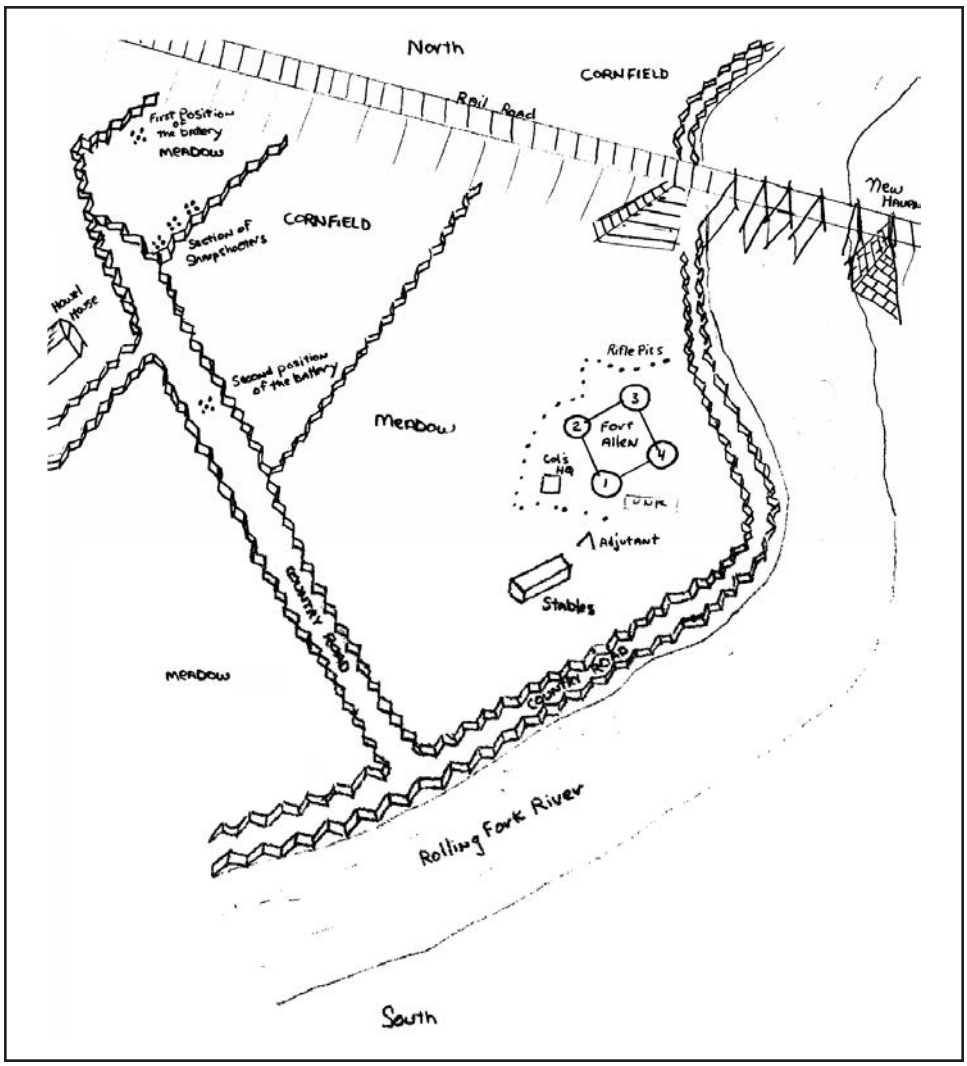

FIGURE 3. HAND DRAWN MAP OF FORT ALLEN WITH THE POSITION OF TROOPS ON DECEMBER 30, 1862. FROM THE JOURNAL OF SGT. JAMES MCNEIL OF THE 78TH ILLINOIS INFANTRY, COMPANY H.

(Lemon 2003:22)

FIGURE 4. WESTWARD VIEW OF THE HILL BEHIND THE HOWELL HOUSE.

FIGURE 5. PUBLIC EXCAVATION DURING THE 2005 CIVIL WAR HERITAGE TRAIL EVENT.

FIGURE 6. SCENES AT NEW HAVEN DURING THE CIVIL WAR HERITAGE TRAIL EVENT.

FIGURE 7. GLASS AND CROCKERY.

FIGURE 8. REMNANT OF A BRICK WALK.

FIGURE 9. ARCHAIC PROJECTILE.

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March 2005

Robert McCullough

➢ The Oliver Phase Sites

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FORSAKEN ARTIFACTS: CRUDE STONE TOOLS

BY

KENNETH B. JOHNSTON
HEBRON, OHIO

INTRODUCTION

In 1998, I began surface collecting artifacts from fields and at construction sites near my home on Buckeye Lake, in southern Licking County, Ohio. Soon after scouring the ground in search of points (the only artifacts I knew of at the time), a pattern was noticed of an over-abundance of hard stone rocks, about the size to fit a hand, often presenting somewhat common shapes and features. The rocks were concentrated in certain areas, such as on a rise in a plowed field, near artifacts, or amidst flint debitage. I took stones home and removed soil by rinsing in water and began to more closely examine all the stone material found.

What emerged, to my thinking, were artifacts - the rocks appeared to have been modified by humans. I became so interested in these stones, I sought them as the primary prey in my artifact hunting. Over the years, I have collected them and have developed acumen for finding them. These rocks have been found in several Ohio counties such as Perry, Fairfield, Delaware, Franklin, Hocking, Morgan, and Summit. However, most of the artifacts described in this paper were found in the Buckeye Lake area; specifically, Licking and Union Townships in Licking County.

Buckeye Lake is man-made and was created as a feeder reservoir for the Erie and Ohio Canal system. In prehistoric times, the area may have been an ephemeral swamp/lake land area. The use of this area by early inhabitants has been described: “”Big swamp,” or “Two lakes,” sometimes, also called by the Indians “Big lake,” and “Little lake,”’ or what is now called the Reservoir, was resorted to by the Indians, in considerable numbers, for the purpose of fishing” (Hill 1881:490).

As an ironic aside, here is an account of the construction of the reservoir:

> The Mound Builders’ works are found in various parts of Licking Township, the stone mound about a mile south of Jacksontown being of the greatest magnitude. It was of gigantic proportions, measuring one hundred and eighty-three feet in diameter at its base; and when found by the pioneer settlers, was between thirty and forty feet in height. Many hundred wagon loads of stone were removed from it, and used in the construction of the reservoir [Hill 1881:489].

The Wisconsin Glacier advancement boundary line runs through Licking County. The raw material for most of the tools documented in this paper was likely sourced from glacier terminal moraine deposits. The proximity of Flint Ridge to cobble and pebble deposits from glaciated times made for a rich and diverse variety of lithic resources for the early inhabitants of the region. Artifacts from all temporal and cultural periods have been found in abundance in this area.

DEFINITIONS

The following are the definitions used in this paper for describing these stone artifacts:

> An *opportunistic stone tool* was a rock selected for its naturally advantageous form, not modified for use, but exhibits evidence of handling and/or wear.
>
> A *crude stone tool* was an opportunistic rock further modified for use by making breaks, chips, or by grinding, etc., to achieve the desired end-form. Evidence of handling and/or wear is exhibited.

Eventually, rocks smaller than the hand-sized ones first noticed were examined. Some of them, too, had indications of human modification. To differentiate between the larger and smaller tools, the following definitions have been applied. These definitions differ from ones used by archaeologists and geologists:

A *cobble tool* is one that was held in the hand and had contact with the palm.

A *pebble tool* is one that was held by, and in contact with, only the fingers and thumb.

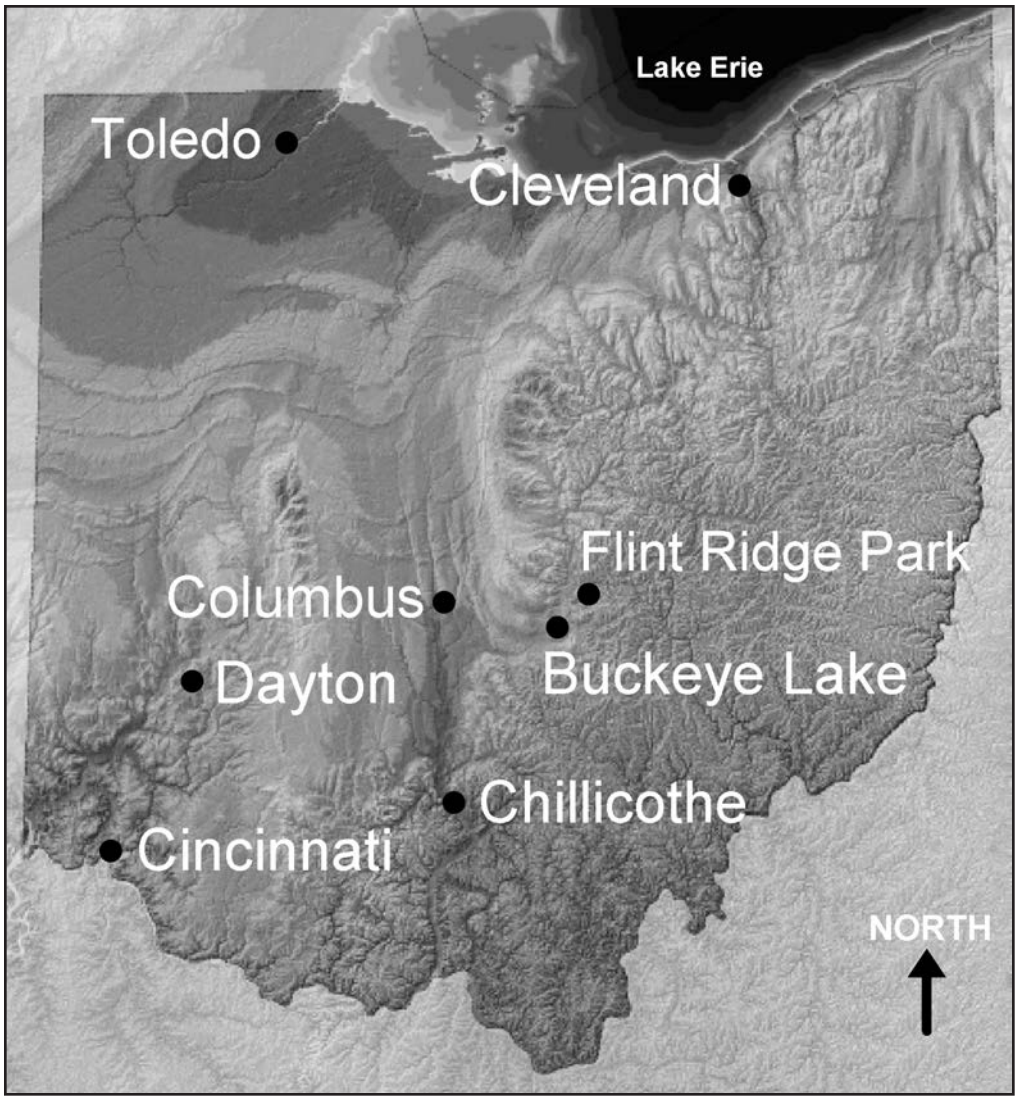

FIGURE 1. DURING THE WISCONSIN AGE, PART OF THE GLACIER KNOWN AS THE *SCIOTO LOBE* GOUGED OUT A BROAD PLAIN IN CENTRAL OHIO. NOTICE THAT FLINT RIDGE AND BUCKEYE LAKE ARE WITHIN THE MORAINE CREATED BY THIS LOBE.

THE SEARCH FOR INFORMATION

Reference material about crude tools seemed scarce. Smaller pebble tool information was non-existent. Some scant information about crude tools was interspersed with information about the more refined stone artifacts. Crude and opportunistic artifacts covered in the literature included

certain abraders, hammerstones, grinding stones, cup stones, and pestle rubbers, for example. However, many of the artifacts found differ from the well-documented types. The tools that have been well-documented seem to scream “Artifact!” even though considered crudely made. Many of the tools I have found have very slight features---they only whisper. They would be considered the crudest of the crude tools.

These stone tools do not appear on inventory lists (available to the public) from archaeological sites. Books or articles dedicated to them cannot be found, not even on easy-to-publish and easy-to-search Internet sites. It cannot be determined if these tools, in all the diversity that has been found, are recognized or studied by archaeologists. I have spoken with many professional, academic and amateur archaeologists, artifact collectors, artifact dealers, geologists, authors, and a consultancy, all of whom shrugged unknowingly, or worse - discouraged me from “wasting” my time collecting and studying them.

INTERPRETATION

It is easy to find rocks anywhere that fit “sweetly” into the hand, which are, of course, not artifacts. Thus, the line of inquiry into crude stone tools undoubtedly enters a very highly interpretive area. However, such artifact interpretation is precisely the job, and the duty, of the archaeological investigator. Because documentation does not exist, this paper is an attempt to describe and document some general characteristics and more specific attributes of these crude tools, based upon personal observations.

Context is the first and most important attribute to be addressed. To be considered are:

a) the micro context, such as finding rocks or pebbles among flint debitage or artifacts,

b) the macro context, such as “very near Buckeye Lake and in an area which is known as a rich source of artifacts,” and

c) a self-referential context, when a) and/or b) may not be known, but several cobbles or pebbles are found in near proximity to each other and are candidates by their attributes to be crude or opportunistic tools (possibly a tool assemblage).

An important trait of crude tools is they are most often asymmetric. If one splits the artifact “down the middle,” the two halves are likely to be very different. This is unlike most other well-described lithic artifacts such as points, knives, axes, adzes, celts, pendants, grooved hammerstones, etc.

Unlike more obvious artifacts, crude stone tools often have very subtle characteristics. Some or most of the original natural surface of the rock may still be intact. There may be some chipping, grooving, or grinding to enhance grip, but it can initially appear to have been caused by natural forces, until other attributes are correlated to the tool.

Some stones were likely tools of relative expedience, made “on the fly” and used very briefly, as compared to artifacts that indicate more time involvement in manufacture. Thus, detectable wear surfaces may not be well-developed, but must be present (unless there are other very clear attributes indicated). Crude tools may not suggest “artifact” until a very careful analysis under magnification has been performed. A 10X lighted magnification scope should be used to confirm and analyze wear surfaces. Otherwise, it would be easy to decide “it’s just a rock” in the field, or even on the work table, and not pick them up or examine them further.

There should be a concurrence of the wear surface with the most advantageous grip of the tool. That is, when the tool is held in the hand to conform to the perceived grip, the wear surface should present itself where it would be optimally accessed and utilized.

The interpreter needs to be aware of right-handed bias and hold potential artifacts in both hands to determine what the functional grip on that tool was. It is possible to discard tools, not being able to detect a good working grip, when the grip could have been detected by working with the stone in the left hand.

More specific attributes of stone tools include:

1) indications of material removal to achieve a better general tool shape,
2) a shape that seems molded to the hand like a ball of clay would be after squeezing,
3) a narrowing, cone-like shape,
4) patina differences on the wear surface, the "air surface" (not in contact with anything during tool use) and the surface which would have been in contact with the skin,
5) handling wear, where evidence of contact by the fingers or thumb is present,
6) thumb pads created for optimal thumb contact,
7) notches, rough spots, and gashes created for placement of the grip of fingers and thumb,
8) ridges and angles to accommodate the gripping hand,
9) secondary or multiple wear surfaces (as sometimes different parts of the tool were utilized),
10) a knob emerging from between the thumb and index finger to improve grip,
11) pitting or other evidence of percussion,
12) flattening or smoothing,
13) a "push-butt" for the base of the palm, or, in the case of pebble tools, for the thumb, to gain force and leverage on the tool, or
14) a shape and feel similar to a piece of chalk in its last moments of use (as in the case for many pebble tools).

The more of these attributes are connected to a stone, the more one can be sure it was used as a tool.

The grip of a tool can easily and quickly be communicated by marking the stone with red, white and blue dots where contact with the thumb, index and middle finger, respectively, was made. It is then possible for anyone to pick up the tool and hold it the way it was held during active use.

THE IMPORTANCE OF CRUDE TOOLS AND A CALL FOR ATTENTION

Flint occurs naturally in outcroppings in fixed places. It is easier to source-identify, easy to surmise how far it was carried or traded. When flint is found away from its natural source, it is easier to conclude a human left it there. (Similarly, bone artifacts seem to get sufficient treatment by archaeologists and collectors. When bone occurs in the context of other artifacts, it is within reason humans left it there and it receives consideration.) The raw materials of crude tools have often been dispersed or occur naturally over broad areas. Sometimes the only specificity of source reported is something like "from the glaciers from the north" or "from the river valley floor." Thus, even very crude types of flint tools, such as utilized flakes and little worked pieces, have been well-studied and documented in much variety, but crudely made stone tools have not. In the archaeological field, this preference for lithic study of tools made with flint and flint-like materials needs to be countered. Failing to pay close attention to every cobble and pebble at archaeological sites is akin to ignoring bone material or anything of flint that is not high art.

Formally trained archaeologists tend to want “data, data, and more data,” which is well enough. However, data is much more difficult to assemble without clear classification and order. The symmetric nature and common stylization of finely worked flint and stone artifacts lends itself easily to classification, thus lithic tool data is slanted toward them. Symmetry is easy for the human eye to catch, and a lack thereof may be another reason why crude artifacts have received such limited treatment by collectors and archaeologists.

Because of the biases favoring flint material, and the need for ease of classification, many archaeologists and collectors have been rendered blind to the possibility of the prolific existence and amazing uniqueness of crude stone tools. Many tools made were probably one-time occurrences. Perhaps they are the “snowflakes” of stone artifacts. Their inclusion in archaeological examinations will greatly expand the early inhabitants tool set available for study.

There is much work for archaeologists to do in this area. For example, each rock or pebble from a site should be very closely inspected for crude or opportunistic tool attributes. If a stone shows wear attributes, it should be catalogued, measured for length, width, weight, and volume, the raw material identified, and each observed attribute entered into a database, so patterns of commonalities and differences may be analyzed. Attributes not yet acknowledged will need to be properly described. Only if attributes are absent, should rocks and pebbles be discarded. Maybe some discrete, definable tool types will emerge from data compilations. For example, rather than just a “crude hammer” tool designation, maybe there are several discrete types of crude hammers that could be designated.

Crude stone tools may be a source of substances for material analysis. Five artifacts illustrated in this paper each have different foreign substances on their surface. It has not been determined what the substances are, and it may be that all have been deposited by natural earth processes. However, in each case, the substance is located only on the wear surface of the tool and no where else. In one case, prodding the particularly craggy wear surface of a crude two-handed pestle with a needle produced a fibrous plant material that emerged from the cracks.

Crude tool categorization may assist in site and area activity analysis. For example, a count comparison of tools used for polishing, abrading, grinding and pounding may be made. Or, a particular raw material may be correlated to polishing, and finding an abundance of it at a site may be a good lead for the archaeologist to follow in the site interpretation.

The study of crude stone tools may be helpful in identification of temporary sites, where more refined artifacts are less likely to have been left behind. Places of transient occupation such as camp sites, kill sites, or places used for on-site processing of locally abundant plant material, may be confirmed or may come to light using crude tool analysis.

Crude tools may provide insight into the lithic material culture and understanding of early inhabitants. For example, it seems they were able to predict fracture results of different rock types the way breaks are predicted in flint tool manufacture. Data may eventually show a preference for certain rock types for certain uses.

Relationships between geographically disparate sites may come to light. For example, tools looking a certain, unique way, made of the same material, may be found at sites (d) (g) and (p), but no others, of sites (a - z). Perhaps, then, (d, g, p) are related.

It may be possible crude stone tools could help indicate differing economic or sub-cultural classes. For example, maybe there is a concentration of fine hard stone tools in one certain area of a site, while they are not found in other areas. If crude tools are identified from other areas of the same site, there could a reason. Perhaps the tools of substantial time investment were used by the wealthy or influential, or for ceremonial purposes, while the every day work of

everyday people was done with the cruder tools. Crude and opportunistic tools do not, however, at this time, suggest any temporal or cultural affiliation. Only with the work of data gathering from archaeologists could such affiliation ever come to light.

It is unlikely the majority of stone tools were finely made. It seems likely that peoples who used more finely developed tools did not use only them exclusively. It seems quite possible some peoples, at some times and places, particularly during the paleo and archaic periods, did not ever use finely ground or polished tools. Where is the accounting for all the other crude stone tools? It could be archaeologists may have assumed there were no tools found in certain areas, when they were present in crude forms and have simply been overlooked.

Crude tools surely must have been used in the manufacture of the finer ones. What were their "meta-tools," the tools used to make the other tools? Where is the accounting for the crude meta-tools of fine stone artifacts?

CONCLUSION

Though in his seminal work, *The Stone Age of North America*, he never documents any crude or opportunistic stone tools as are covered here, Warren K. Moorehead's words from another work seem apropos. Appreciate the fact that he wrote these words one hundred twenty years ago:

> The museums are full of axes, celts, pipes, banner stones, discoidals, hematites, tubes, slate ornaments and ceremonials, pestles, hammers, etc. What the museums need (as of great value to Archaeological Science) are collections from a single locality including *everything* found in that locality. They want the finds of the village site, the studies in unfinished specimens, the poor and the good, the imperfect as well as the perfect. In this regard, the collectors make a great error. Most of them do not save *everything* but cling to the 'pretty relics' and discard the rough and the rude. Personally, I would give more for a collection, provided it contained *all* the types, *all* the finds of a certain valley than for just the fine, perfect objects of that valley. From a collection of the latter, I would be misled, for if I accepted it as indicative of the people of that valley, I would say they made the most beautiful works of aboriginal art, nothing rude or unfinished being turned out by their artisans. In such a statement, I would be unpardonably wrong [Moorehead 1884:56].

By their very nature, there is a most fundamental aspect to crude stone tools. They are universal, but also differing from place to place, to be found almost anywhere human beings have been and lived, in any time or culture of interest to early human collectors and scholars. They are the base of the artifact pyramid. There is a good possibility crude stone tools may indeed be the most commonly available early inhabitants' artifacts for collection and study. The greater inclusion of them will immensely expand the stone tool universe available for archaeological study and analysis. They must stand as a distinguished and celebrated class of artifacts, not dismissed as stones too close to items of natural chance or coincidence.

Using the attributes and features described here, and ones yet to be identified, any Argus-eyed archaeologist or collector should be able to present a compelling case for the existence of cobble and pebble tools along with, and in greater numbers than, the more finely made artifacts. Beauty may be found in their workmanship, simplicity, and functionality. They appear to have been overlooked, set aside, or discarded. *Let them be forsaken no more!*

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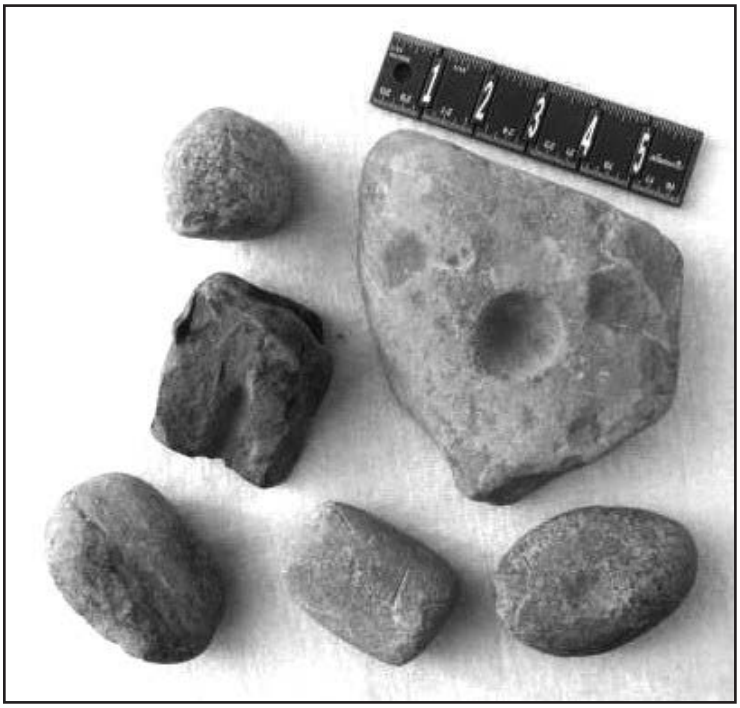
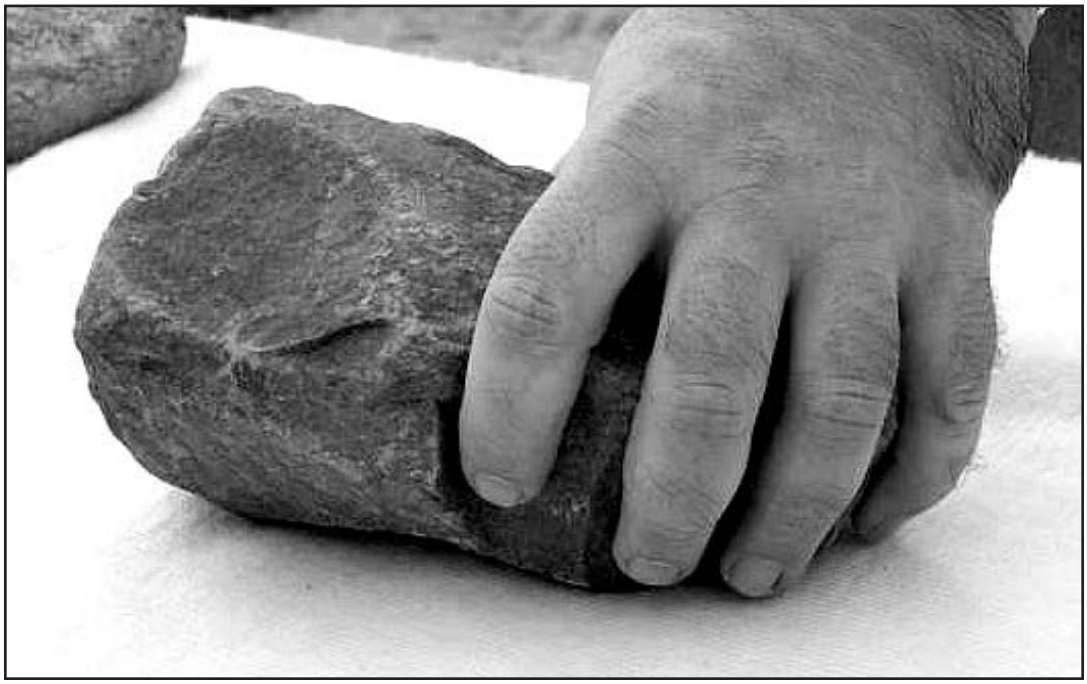
Because of their lack of symmetry and complex three-dimensional nature, it is difficult to communicate the significance of opportunistic and crude cobble and pebble tools in words or in the two dimensions of photographs. The photos in this paper are for the most basic illustrative purposes. Holding the artifacts in the hand brings their true splendor to life.



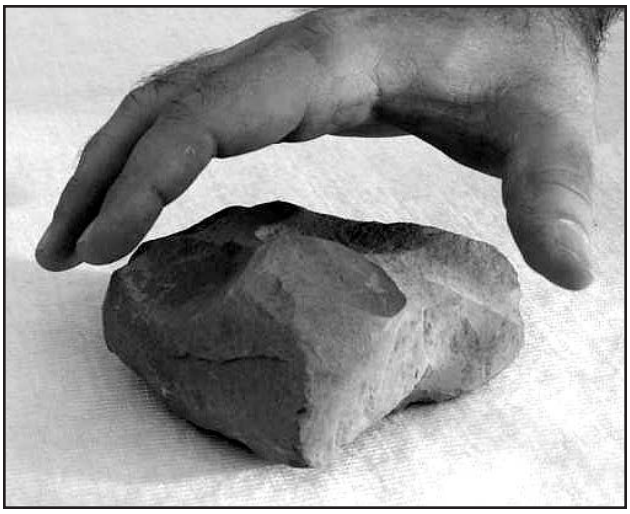
THESE KINDS OF CRUDE STONE TOOLS ARE OFTEN RECOGNIZED AS SUCH, UNLIKE "FORSAKEN" ARTIFACTS.

TWO SIMILAR FORMS. PERHAPS CRUDE STONE TOOLS CAN BE ORGANIZED OR CLASSIFIED.

THIS PHOTO SHOWS SURFACES CREATED TO ACCOMODATE THE FINGERS.



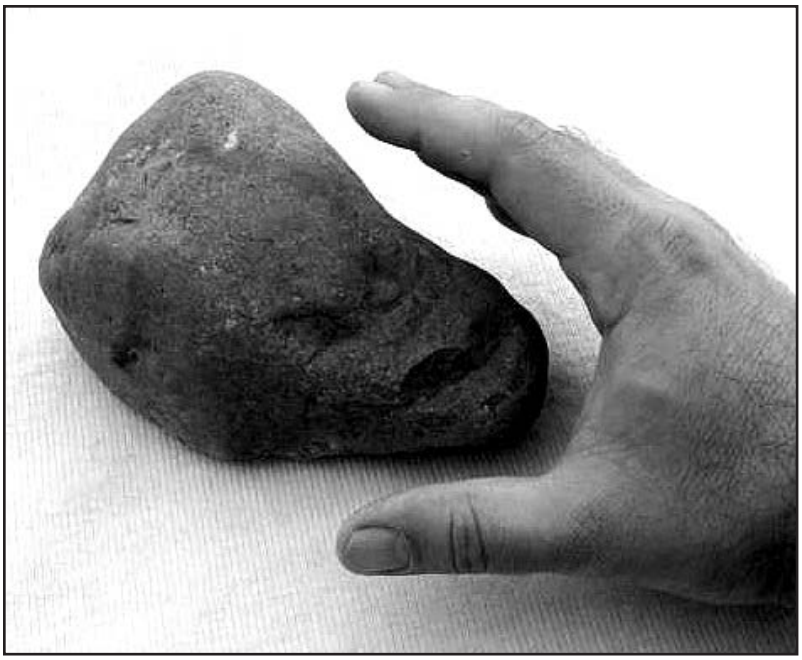
THE TOP VIEW OF THIS TOOL SHOWS A PIT ON THE LEFT WHERE MATERIAL WAS LIKELY WORKED. NOT SHOWN IS A GROOVE ON THE BACKSIDE AND BOTTOM OF THE TOOL TO ACCOMODATE THE THUMB.



THIS STONE HAS BEEN REDUCED TO CREATE ANGLES AND SURFACES TO FIT PRECISELY IN THE PALM.

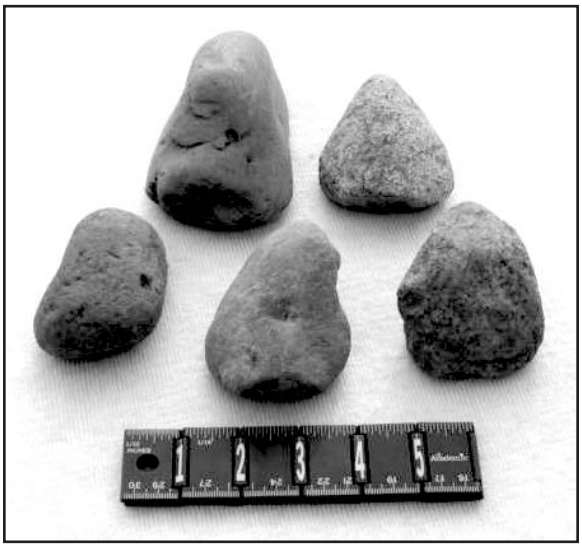
A VIEW OF THE TOOL PLACED IN THE PALM SHOWING A "NOB" EMERGING BETWEEN THE INDEX FINGER AND THE THUMB TO IMPROVE THE GRIP.

A VIEW OF THE WORKING SURFACE OF THE TOOL WHEN HELD.



THIS IS AN EXAMPLE OF AN OPPORTUNISTIC TOOL. THE NATURAL FORM OF THIS ROCK IS ANGLED AND TAPERED TO PROVIDE A HANDLE. IT IS NOT, OR PERHAPS VERY LIGHTLY, WORKED TO IMPROVE THE GRIP. A WASHBOARD-LIKE PARALLEL-GROOVED WORKING SURFACE ON THE BOTTOM APPEARS AS IF IT WAS SUITABLE FOR GRINDING PLANT MATERIAL. THIS TOOL WAS FOUND ON THE BANKS OF THE OLENTANGY RIVER, WHETSTONE PARK, COLUMBUS, OHIO.

THESE TOOLS ALL HAVE AN ERGONOMIC SHAPE VERY SIMILAR TO A MODERN COMPUTER MOUSE. THEY ALL FIT SNUGLY IN THE CURVED PALM AND PRESENT A FLATTENED WEAR SURFACE.



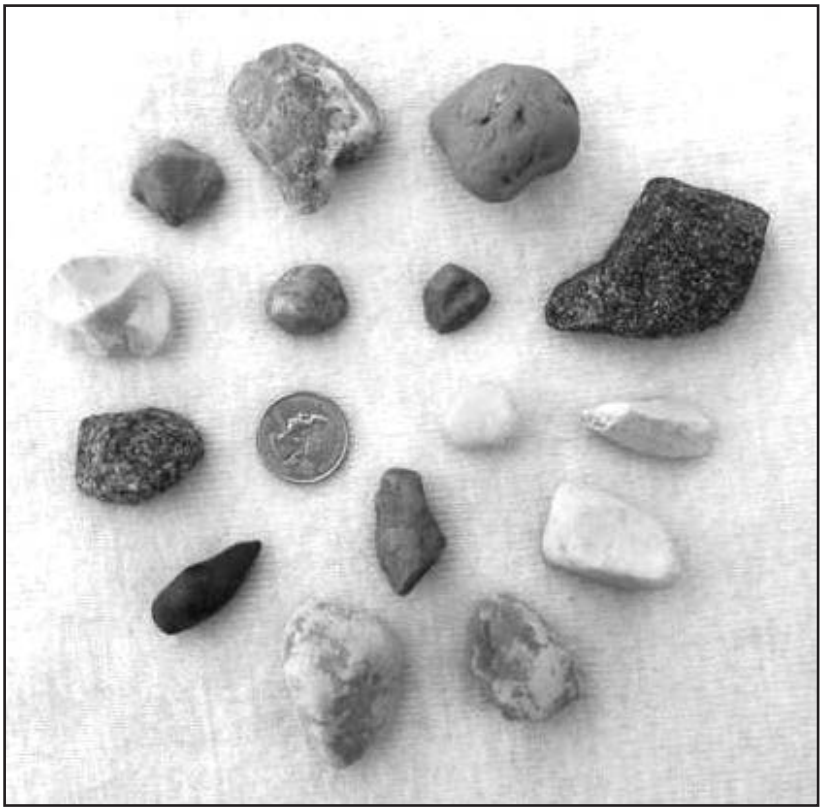
TWO DEEP GROOVES ON THE TOP OF THIS PEBBLE TOOL ACCOMODATE THE INDEX AND MIDDLE FINGERS.

THIS PEBBLE TOOL WAS ORIGINALLY ROUNDED IN ITS NATURAL FORM. TWO SKILLFUL AND SIMILAR BREAKS WERE MADE TO REMOVE MATERIAL FROM EACH SIDE OF THE TOP, PROVIDING A RIDGE TO ALLOW A GRIP AND PERFECT FIT FOR THE INDEX AND MIDDLE FINGERS. THE BOTTOM AND THE FRONT TIP OF THIS TOOL INDICATE WEAR.

THIS TOOL HAS WEAR PADS WHERE THE THUMB AND INDEX FINGER CAME INTO CONTACT WITH IT. IT APPEARS TO HAVE BEEN USED MUCH LIKE A MODERN POOL CUE CHALK BY INSERTING A STICK OR BONE, THEN ROTATING THE TOOL. THE HOLE IS WIDE ON THE OUTSIDE AND TAPERS TO A POINT INSIDE THE TOOL. COULD IT HAVE BEEN USED TO SHARPEN AN ANTLER TINE?

THESE TOOLS HAVE RESIDUAL MATERIAL ON WHAT WOULD HAVE BEEN THE WORKING SURFACE. THE MATERIAL RESPECTIVE TO EACH TOOL IS NOT PRESENT ANYWHERE ELSE ON THE TOOL SURFACE. THE RESIDUAL MATERIALS RANGE FROM A CHALKY WHITE CONCRETION ON THE TOOL ON THE UPPER LEFT, TO A BLACK, PITCH-LIKE SUBSTANCE ON THE TOOL ON THE LOWER RIGHT. CRUDE STONE TOOL RESIDUE SHOULD BE AN IMPORTANT RESOURCE FOR ARCHAEOLOGICAL MATERIAL ANALYSES.

THIS TOOL TAPERS PERFECTLY TO BE HELD AND STABALIZED BY THE LEFT HAND TO PROVIDE A WORKING SURFACE. THE SINGLE LARGE GROOVE RUNNING FROM SIDE TO SIDE COULD HAVE BEEN USED TO PROVIDE A PLACE TO WORK ON AN INTERMEDIATE MATERIAL WITH AN ADDITIONAL HAND TOOL, OR IT COULD HAVE BEEN USED TO WORK OTHER STONES DIRECTLY.

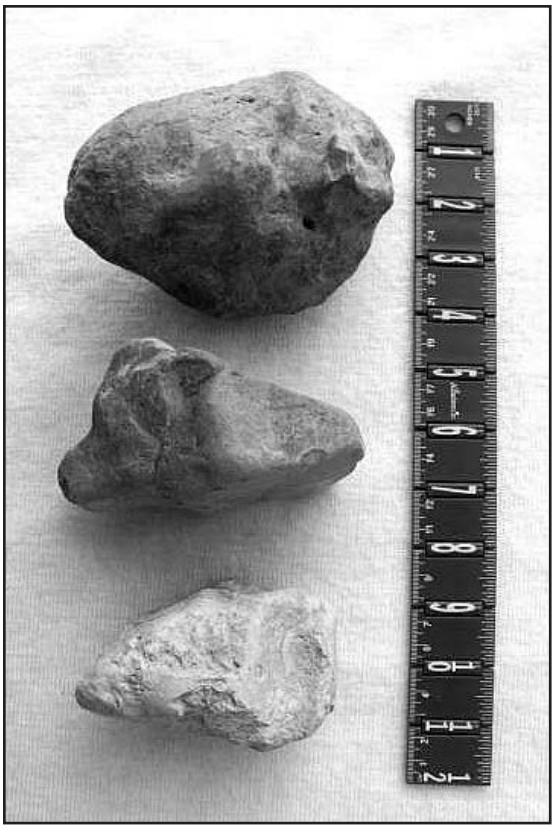


THIS IS AN ASSORTMENT OF PEBBLE TOOLS. THESE WERE FOUND IN THE CONTEXT OF FLINT ARTIFACTS, DEBITAGE, AND OTHER STONE TOOLS IN ADJOINING FIELDS ALONG THE NORTH SHORE OF BUCKEYE LAKE. COMPOSITION RANGES FROM HARD WHITE QUARTZ TO A SOFT, TALC-LIKE, CHALKY MATERIAL. THEY ALL EXHIBIT WHAT APPEARS TO BE A WEAR SURFACE AND SHOW EVIDENCE OF HANDLING. SOME OF THESE PEBBLE TOOLS WERE WORN DOWN LIKE A PIECE OF CHALK AND IT APPEARS THEY WERE HELD IN THAT SAME WAY.

A PEBBLE TOOL WITH A WORKING EDGE.

I CALL THIS A "FINGER PESTLE."

EXAMPLES OF THE ALL-PURPOSE HAND TOOL, PERHAPS THE MOST COMMON AND BASIC OF ALL THE TOOLS USED BY ORIGINAL INHABITANTS. THEY COULD HAVE BEEN USED TO GRIND, ABRADE, OR POUND - MAYBE EVEN USED AS WEAPONS.



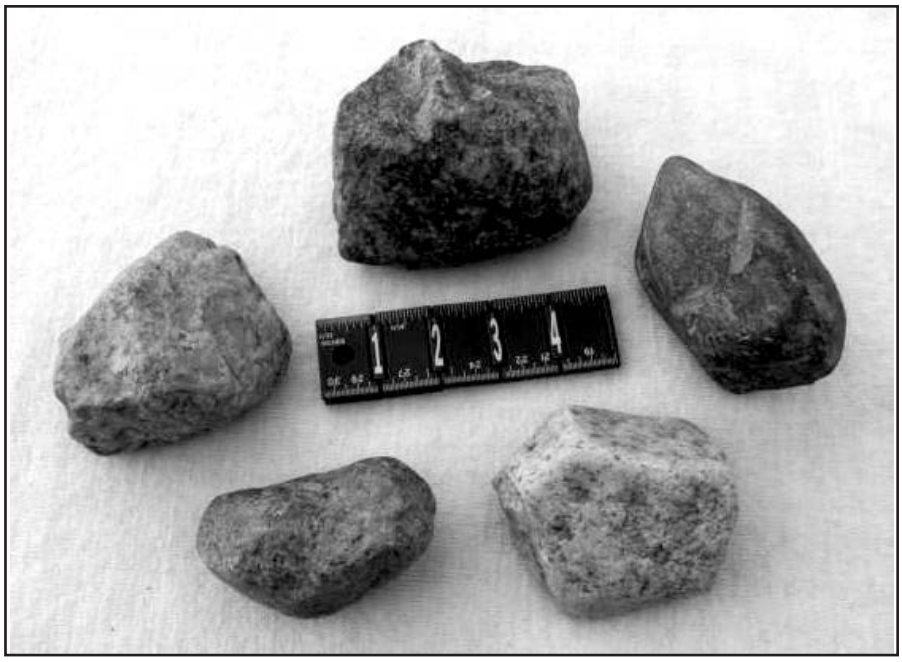
THESE THREE TOOLS HAVE THE SAME ATTRIBUTE - THAT WHEN HELD IN THE HAND, ARE BALANCED SO YOU ARE ABLE TO PRODUCE AN ALMOST "MOTORIZED" RAPID ROCKING MOTION. THEY HAVE POINTS THAT PROTRUDE LIKE WEAR BITS (SEE THE LEFT SIDE OF EACH TOOL IN THE PHOTO). BASED ON OBSERVATIONS OF MODERN DAY FLINTKNAPPING TOOLS, THESE COULD HAVE BEEN USED FOR THAT PURPOSE. TWO WERE FOUND TOGETHER NEAR A SEVERAL POUND BLOCK OF FLINT IN THE RESIDENTIAL CLINTONVILLE AREA OF COLUMBUS, ON A RAVINE HILL OVERLOOKING AN OLENTANGY RIVER TRIBUTARY. THE THIRD (THE MIDDLE ONE IN THE GROUP PHOTO) WAS FOUND IN A FIELD NEAR BUCKEYE LAKE, OHIO, AMONGST FLINT DEBITAGE.

THIS TOOL (TOP TOOL OF THE GROUP PHOTO) HAS A HANDLE THAT CRADLES THE THUMB AND INDEX FINGER. THERE IS A HOLE IN THE TOOL WHERE THE INDEX FINGER WOULD HAVE BEEN PLACED. HOLES USED LIKE THIS PROVIDE IMPROVED GRIP AND CONTROL.

MIDDLE TOOL OF THE GROUP PHOTO, AS HELD.

THIS TOOL (BOTTOM TOOL OF THE GROUP PHOTO) HAS GRIP PADS FOR THE THUMB AND INDEX FINGER. THE WEAR TIP HAS BEEN BROKEN OR WORN DOWN.

NOTICE THE HOLE IN THE TOOL FOR THE MIDDLE FINGER TIP TO REST IN.

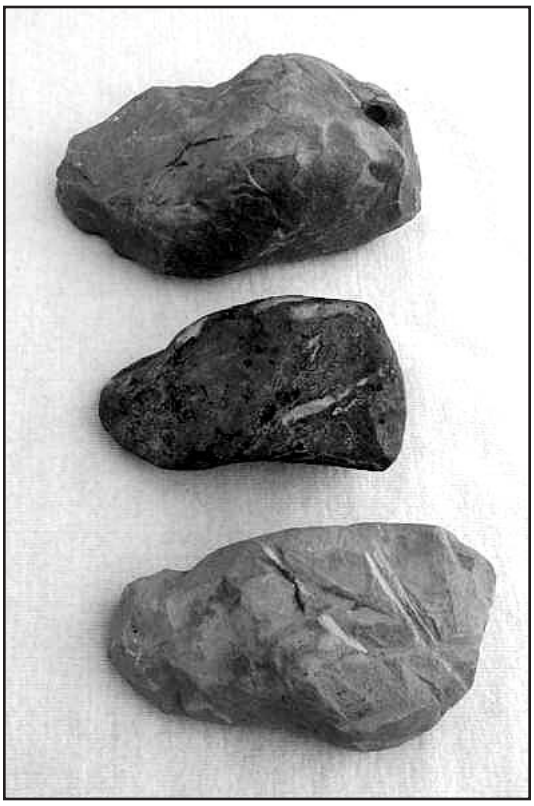


THESE TOOLS WERE FOUND ON THE BANK OF A KETTLE-LIKE SINKHOLE ALONG THE NORTH SHORE OF BUCKEYE LAKE. THEY WERE FOUND THERE DURING A SEVERE DROUGHT, EXPOSED ON THE SURFACE. I BELIEVE THESE TO BE A TOOL SET, AS THEY WERE FOUND IN IMMEDIATE PROXIMITY TO EACH OTHER. EACH IS A FINE EXAMPLE OF A CRUDE STONE TOOL AND THEY MAY HAVE BEEN AN ASSEMBLEDGE OF SOMEONE'S KITCHEN OF THE PAST. THEY VARY GREATLY IN SIZE; ONE TAKING A LARGE, STRONG HAND TO HANDLE WITH EASE, ANOTHER SEEMINGLY SMALL ENOUGH FOR A CHILD TO HAVE USED.

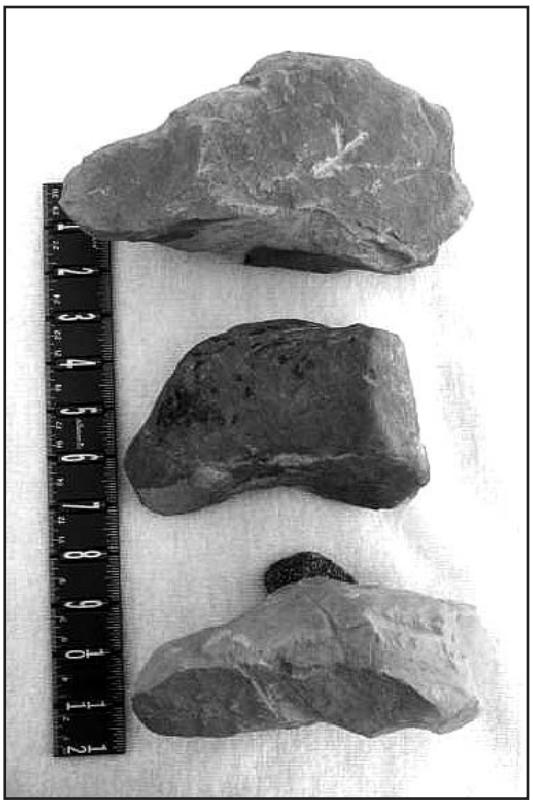
THIS IS THE TOP TOOL OF THE GROUP PHOTO, SHOWN AS HELD IN THE HAND.

THIS IS THE TOOL FROM THE TWO O'CLOCK POSITION IN THE ABOVE PHOTO, SHOWN AS HANDS GRIP IT MOST EFFECTIVELY IN A SLIGHTLY OFFSET "PRAYING" POSITION. THIS WAS MADE FROM A GREEN STONE MATERIAL THAT SEEMS TO HAVE BEEN USED RATHER FREQUENTLY.

PROPERLY CLASPED IN THE HANDS. THE BOTTOM WEAR SURFACE OF THE TOOL CAN BE SEEN.



THESE WERE FOUND IN THE SAME ARTIFACT FIELD AND I CALL THESE "LAP ANVILS." THIS VIEW SHOWS THE TOP WORKING SURFACE OF EACH. THEY APPEAR TO HAVE BEEN USED TO PRESENT A HARD WORKING SURFACE THAT COULD HAVE BEEN STABALIZED WITH A HAND AND A LEG.



THIS VIEW SHOWS THE CURVED BOTTOM OF EACH THAT ALLOWS IT TO SIT NICELY ON THE LEG. THE BOTTOM ANVIL IS PROPPED UP WITH ANOTHER ROCK TO HELP ILLUSTRATE THE CURVE.

ACKNOWLEDGMENTS

I would like to thank Kathleen Johnson, photographer of my artifacts, who did such fine work. Also, thanks goes to Daeli Frost for providing the excellent cover photo used on this issue of the *Currents of Change*.

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MYTHICAL LAND OF GIANTS AND PYGMIES: JOHN O. BLANTON AND THE TENNESSEE MOUND BUILDERS

BY

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ABSTRACT

A brief and little-known booklet entitled *Pre-Historic Man in Tennessee: The Mystery Solved* by John O. Blanton (1896), represented the apex of the nineteenth century's myth of the mysterious Mound Builders. Even by the academic standards of his day, Blanton's fanciful thesis of troops of enslaved pygmies attending vast armies of giant Huns engaged in epic battles against peaceful Hindu mound builders was an intellectual anachronism. A careful reading of his booklet reveals his unquestioning use of material originally published by John Haywood in his 1823 volume, *The Natural and Aboriginal History of Tennessee*. Though severely lacking in scientific method, Blanton's booklet affords an interesting insight into the well entrenched regional folklore of his era.

> Let not the reader conclude that these statements are too fanciful and that this treatise is written merely to point a moral or adorn a tale, but let him follow closely the writer and see if this seeming picture of imagery is not converted into real historical facts.
>
> - John O. Blanton (1896:2-3)

INTRODUCTION

A slim (20 pp.) and little-known booklet entitled *Pre-Historic Man in Tennessee* published in 1896 by John O. Blanton undoubtedly marks the apex of the sometimes rampant speculation and romanticism characteristic of the region's nineteenth century antiquarians. The precise degree to which Blanton was influenced by the folklore of the region, various newspaper articles such as a sensationalized announcement of the discovery of a "vast" pygmy cemetery in Coffee County published in 1876 (Anonymous 1876; see Appendix), and his own readings about exotic places and ancient times cannot be determined with any degree of precision. Regardless, by the date of his booklet's publication, such blatantly fanciful and romanticized tales were already intellectual anachronisms (cf. Willey and Sabloff 1974:21-87).

Little information is available regarding Blanton's life beyond the limited glimpses afforded in *Pre-Historic Man in Tennessee*, his only known published work relating to regional archaeology (cf. Ball 1976). The title page of his booklet proudly proclaims the author as "A member of the Tennessee Conference, M. E. Church, South" suggesting that he was certainly familiar with Biblical commentaries and related studies. His writing style and vocabulary clearly bespeak of a good education and he obviously valued the company of educated people. Blanton (1896:17) specifically discuses visiting the Old Stone Fort in May of either 1895 or 1896 in the company of "…his genial and intelligent young friend Prof. H. H. Vincent, of Manchester"

It is of note that the dedication also appearing on the booklet's title page records that his mother's parents "…came across the mountains from Virginia in the beginning of the present [nineteenth] century and settled on the head waters of the Duck River in Middle Tennessee." At least as late as the 1970s, various Blanton descendants yet resided between Manchester and Tullahoma in Coffee County. While briefly discussing his childhood, Blanton (1896:17) observed, "It [the Old Stone Fort] was an 'ancient riddle' to the writer in his boyhood[;] when waiting for grist at a small mill near by he strolled over the mysterious place and it was no less marvelous to him after a lapse

of a quarter century…" Accordingly, it is reasonable to surmise that he grew up near Manchester and had the opportunity to personally examine the Old Stone Fort earthen enclosure (**Figure 1**) on a number of occasions beginning at least as early as ca. 1871.

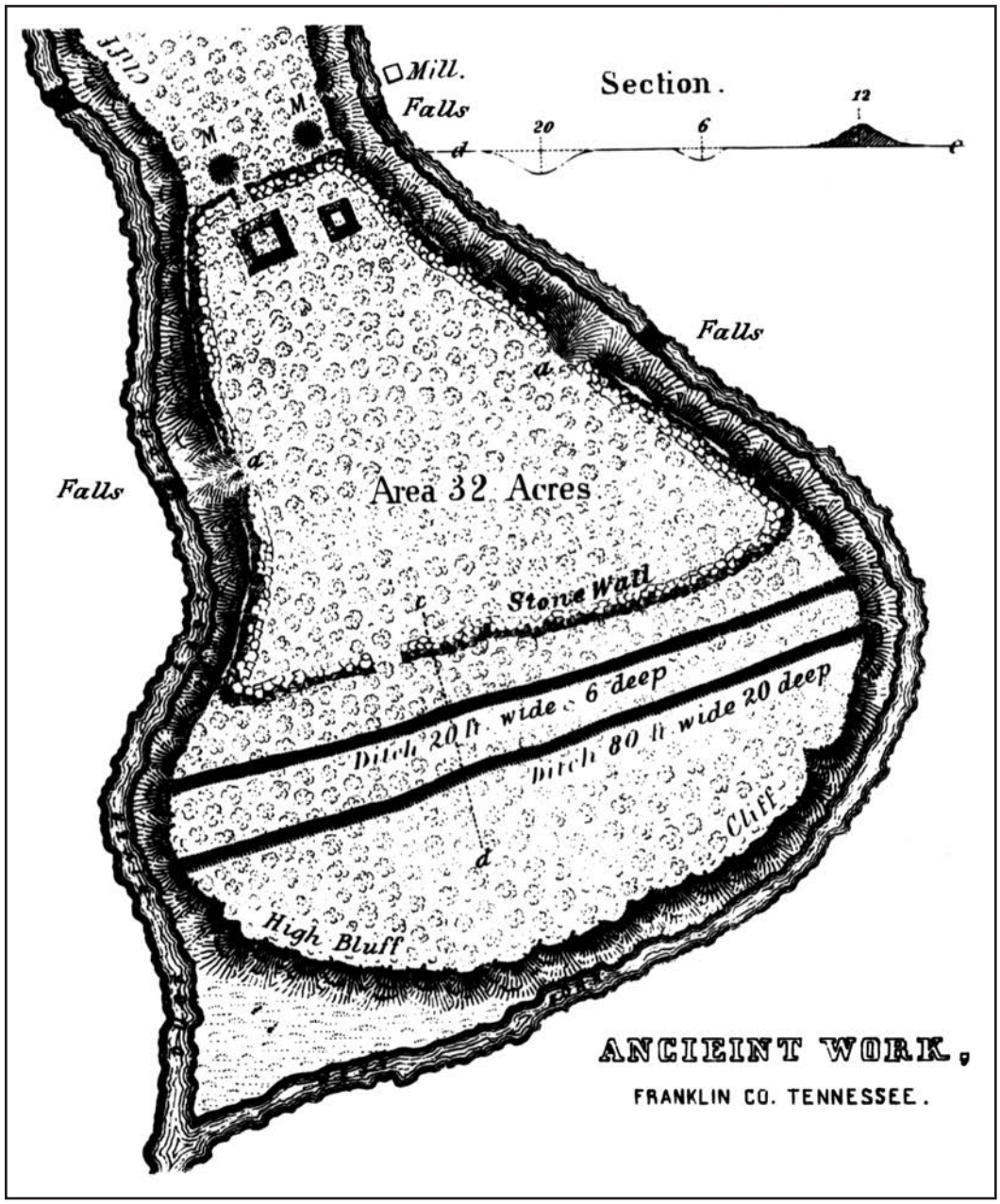

FIGURE 1. OLD STONE FORT, MANCHESTER, TENNESSEE.
(Squier and Davis:PLATE VII, Number 1)

Although it is entirely possible that as an adult Blanton visited other earth works and mounds in various parts of the state, the preponderance of his descriptive information was extracted from Haywood's (1823) *Natural and Aboriginal History of Tennessee*. Though it cannot be stated with certainty that he was completely unfamiliar with various scholarly studies of the era such as

Squire and Davis (1848), Jones (1876), Thomas (1891, 1894), or the first edition of Thruston's *The Antiquities of Tennessee* which appeared in 1890, their impact on his conclusions was certainly minimal at best. It may be determined with a greater degree of assurance that his writing reflects no degree of influence from authors (e.g., Haven 1856:38-39, Jones 1876, Troost 1845) which contradicted visions of exotic races and epic conflicts. As will be noted in the passages to follow, even a cursory reading of his booklet reveals that he liberally - and unquestioningly - extracted material from Haywood's (1823) account of early nineteenth century discoveries in Tennessee. It is further possible that he was directly or indirectly (notably by Haywood's book) influenced in his attribution of the Mound Builders to Hindu origin based upon the long discredited conclusions reached by Caleb Atwater (1820). Blanton makes no comments to suggest that he personally undertook excavations at the Old Stone Fort or any other site in the state.

The only comments encountered in the popular literature of the era specifically relating to Blanton's publication appeared in a biting - and indeed arrogant - critique of Southern culture and literature released in the pages of *The Atlantic Monthly* in June 1897. As observed by Trent (1897:768):

> That criticism in the South lags far behind creative literature will be apparent to anyone who will take the trouble to run over a list of the really important Southern books published since the war, or to read what passes for criticism with the easy-going people of that section. No stress need be laid on the absence of critical journals, for the whole country has too few of these, and they could not well be kept up outside the large publishing centres [sic]. One must emphasize, however, the gush that Southern newspapers continue to lavish upon every native who makes the least name for himself in literature, provided he does not run counter to the prejudices of the section. One must also consider the uncritical character of most of the textbooks on literature and history specially prepared for Southern schools, and the ingenuous *naïveté* of the demand for such books, as well as the unremitting flow of bad rhetoric, bad logic, and bad history, in the shape of orations, pamphlets, and even volumes which give us metrical chronologies belated by five hundred years, and ethnological speculations as remarkable as those of a worthy clergyman who has recently connected the mound-builders of Tennessee with the inhabitants of the Ganges by discovering in the former traits and characteristics which he asserts to be "positively Hindoic" [italics in original].

TALES OF PYGMIES AND GIANTS

Based upon his research, Blanton envisioned epic clashes between two opposing and resolute forces. According to him, the "natives" of the region were the peaceful and deeply religious "mound builders" of "Hindoo" origin who farmed and tended their flocks (presumably sheep but not specified by Blanton). The tranquility of their idyllic existence was destined to be shattered by the invasion from the north of a vast army of savage "giant" Huns who were tended by a large troop of enslaved "pygmies." A series of passages from Blanton's booklet provide interesting insights as to alternate explanations in an age of increasingly serious archaeological research.

As envisioned by Blanton (1896:13), there was no doubt regarding the origins of the "giant" Huns who conquered Middle Tennessee:

> The Huns were a Scythian tribe from some place in Asiatic Tartary [and] they came to the northern part of America about the year A.D. 550. … Henceforth we will call this people the Giants who at length, as a chilling frost, came from the frozen regions of the north and nipped the blossoms of southern prosperity. As soon as

> this people came through the gates which open into this continent and over the peninsula which joins the two continents [i.e., Asia and North America] together, they marched directly into some climate of America, which preserved their size as long as the rest of humankind retained theirs, thence they proceeded southward for the spoils of war. The vast number of fortifications in Tennessee and elsewhere show that their wars with the Mound Builders were of long continuance.

Based upon his interpretation of archaeological sites and materials within the region, Blanton offers an interesting account of the skeletal remains of the giants. He observed (Blanton 1896:13-14):

> …The bones and relics of these giants are found throughout our State and most especially in Middle Tennessee. They are found all over the southern part of the Ohio Valley and as far south as the States of Alabama and Mississippi - but we have no evidence that they were west of the Mississippi river in their work of extermination.
>
> On the farm of John Miller in White county [sic] in 1823 were a large number of graves, the bones in which show that the bodies to which they belonged must have been seven feet high and upwards.
>
> …In 1809 Col. Sheppard, a man of large size, dug up near Nashville the jaw bones of a man, which easily covered his whole chin and jaw. On the Overton farm near Nashville there have been exhumed bones of extraordinary size indicating a height of eight feet. On the Northern farm, Davidson county, 11th district two years ago [i.e., 1894], some parties in resetting an old fence found many of the bones of the Giants - near by is an ancient grave yard. The fact is Davidson county is full of the remains of the Giants, which is proof that these people after they had driven out the Mound Builders from that fertile section, remained there quite a while, feasting upon and enjoying their great and rich booty.
>
> In Giles county was found a human skull that a hat seven inches wide and eight inches long did just slip over and cover. At the mouth of Obed river was exhumed a skeleton, the skull was large enough to go over the head of a common sized man and the thigh bone applied to his reached from the point of his hip to the calf of his leg. The writer might mention many other skeletons of the Giant race that have been discovered in our State, but is not the above sufficient to satisfy any unprejudiced mind that there was a numerous race of people of huge size and stature, who inhabited our country, and that their height was from 7 to 8½ feet and their bulk in proportion. The skeletons of these Giants are covered entirely under the ground with flat rocks placed on the edges, at the sides and at the head and feet in the form of a box[1]. … The men who deposited the skeletons we are now contemplating were Huns, a tribe of Scythians of northern growth, and they came south and exterminated or drove away the inhabitants.

The ubiquitous pygmy remains encountered in regional graves are viewed from an entirely different perspective. Illustrating the uncritical use of statements recorded by Haywood (1823:187-195), Blanton (1896:15) remarked:

> …There was contemporaneously with the Giants of Tennessee a race of people of small stature. These people were the Pigmies of the Giants and were captured by them somewhere in the northeastern part of America and were adopted and brought as slaves by them in their southward wanderings. In 1820 a great number of small graves with skeletons in them were discovered in White county. A Mr. Lane

> submitted quite a number of these bones to the medical fraternity at Nashville and it was their opinion that the skeletons belonged to adult persons. The height of this people was from 2½ to 3 feet and they buried after the fashion of the Giants with rocks set up around the body, and head to the east and face [sic][2] to the west.

In addition to describing in some detail the lifeways of the giants, he elaborates (Blanton 1896:10-13, see also Haywood 1823:195-199) on one aspect of their warlike culture - martial music (Blanton 1896:14):

> In the beginning of this [early nineteenth] century there was ploughed [sic] up in Hawkins county, a stone trumpet. It seems to have been made of hard soapstone and when blown through makes a sound which may be heard two or three miles. It is very smooth on the outside but rough within. This was obviously used by the giants to convene assemblies, and to regulate the movements of their army, [and] on days of rejoicing to make a part of the musical sounds with which the people were entertained.

As the relentless army of giant Huns marched across the countryside, the region became a massive battleground as each side fought for supremacy. In consequence of this warfare:

> …Tennessee and the Ohio valley abound with ancient forts which show the great length of the bloody wars of the Mound Builders and Giants. The latter began the war upon the northern borders of the former and continued step by step, from victory to victory through a period of not less than 200 years until they had pushed their conquests quite to their southern limits which were within the territory now Alabama, Georgia, and Mississippi.
>
> On the south branch of Forked Deer River is an ancient fortification[3]. It is 250 yards square. The walls are eight feet high and made of clay. Large trees are growing on the top and sides of the wall. Within these walls are a number of mounds. In Stewart county, on Well's Creek is a fort about ninety feet square with bastions twelve feet square at the opposite corners on which are growing white-oak and hickory trees[4]. On the Caney Fork, southwest of Sparta are the remains of an ancient fort containing about four acres perfectly square[5]. The walls being composed entirely of dirt, as appears from its present state of ruins. Here we may conjecture, a great battle was fought as nearby is a large burying place of the Giants. But we will not attempt to name all the ancient fortifications of Tennessee for that would be too tedious and an impossibility. … I wish to say here to all inquirers that the forts under consideration were constructed by the Mound Builders for their defense against the Giants and their allies in their war of extermination (Blanton 1896:16).

The demise of Middle Tennessee's long suffering "mound builders" was the result of a series of slow and hard fought military campaigns. Blanton (1896:19-20) summarizes his interpretation of these events:

> The giants … effected a crossing at the [Cumberland] river, meeting with but little resistance and became possessors of its fertile and beautiful valley. The left wing of the army proceeded up the Caney Fork river and its valley in their march of conquest and blood, till after many years they reached the country now White county where it is evident they remained for quite a time. Those on the extreme right about where Ashland City and Clarksville are now situated had an easy passage of the river - the natives fled to the interior and fortified on Well's creek in what is now Stewart county. Here at length the Giants came and by their

> great numbers and strength scaled the walls of the Mound Builders, and a general massacre ensued in which not one of the latter were left to tell the tale. The future operations of this part of the Giants were up the east side of the Tennessee river to the mouth of Duck river, thence up the rich valley of this river.
>
> The terrified inhabitants in the country now Davidson county fled to the Harpeths where forts were erected[6]. On Little Harpeth [River] the Mound Builders had a fort 500 yards square[7]. The walls of dirt were five feet high in 1821. Here the Giants were stubbornly resisted time and time again by the Mound Builders. This is evident from the great numbers of graves and remains of the Giants in the vicinity. But the besieged were finally slain or escaped. On the Giants moved from fort to fort where the poor people experienced the same fate as at Little Harpeth till they became the sole possessors of what is now called the Central Basin of Tennessee. Those of the Mound Builders who had an opportunity to escape fled southward to the highland rim and on upper Duck River where the Old Stone Fort was built[8]. In process of time onward came the marauders. Many came across the country from Stone's river, many came up Duck and Elk rivers, meeting the army of Caney Fork who had spread over the country from Sparta to Pelham. The Stone Fort being impregnable the Giants contented themselves to lay siege to the place and quietly enjoy the fruits of the fields and the flocks[9] of the Mound Builders for miles around. The besieged having exhausted their supplies and reduced to great want resolved to cut their way through the enemy and escape across the mountains. Accordingly they left the [Old Stone] fort and began their march in a south-east direction until they came to a place ten miles from the fort near Hillsboro where the Giants rushed upon them from every quarter and a terrible hand to hand slaughter ensued in which thousands of the Giants and about all of the Mound Builders were slain - a few of the latter may have escaped across the mountains. There is at this place on the lands of the late J. J. Brown a very large grave yard where hundreds of graves of the Giants can be seen at this day [i.e., 1896].
>
> As to the Mound Builders who inhabited the territory now West Tennessee, we conjecture they were destroyed by an army of Giants who crossed the Ohio River from the Illinois side, the decisive battle having been fought in the fortification on Forked Deer River.

It is of interest to compare the site described in this passage - near Hillsboro, on the property of J[ames J.] Brown, and a cemetery containing thousands of graves - with the "extensive" pygmy cemetery reported in *The Daily Graphic* for March 17, 1876 (Anonymous 1876). As best as may be determined, both accounts appear to be referring to the same site. It seems that within a span of 20 years, the remains in this cemetery had almost miraculously transformed from being those of pygmies into those of giants.

One may reasonably ask what became of the giants after their many years of warfare. Blanton (1986:20) addresses this:

> The ranks of the Giants were greatly thinned by their long war with the Mound Builders and they had lost their great size long before the close of the war. The climate being uncongenial to them, millions of them perished and they finally became the remnant of a powerful race. Those of them who did not perish in the South returned North and were absorbed into the North American Indians who were then beginning to spread over our continent.

CONCLUDING REMARKS

When carefully considering the early claims of pygmies and giants, it seems inevitable that several salient and significant questions might be raised as regards the logic behind the myth. For example, it is to be presumed that only males were giants as nowhere does one find specific reference to females of extraordinary stature. One must further wonder that the giants apparently had the lowest infant mortality in the world as no mention appears concerning skeletons interpreted as being their children. Dependant upon the "authority" cited, pygmies varied from but 2-3 feet high while giants measured a towering 7-8½ feet in height. How then did the early writers account for individuals who stood but 5-5½ feet or so in height (which was close to "typical" stature)? Reflecting upon subsequent archaeological studies of the manifestations of social stratification (e.g., Brown, ed. 1971, Rowe 1962, Sears 1961), even the most casual observer could not help but ultimately notice the almost chaotic intermixture of so-called pygmies and giants in the same cemeteries suggesting that no distinction existed between presumed master and slave. As final observations in this regard, the critical reader must flatly wonder why the physical remains of the pygmies and giants reported with such authority at various times throughout the nineteenth century have nowhere been preserved for further inspection and no such burials have been discovered by subsequent archaeologists excavating stone box graves within the region.

Despite his interpretation of the facts as he knew them and the nature of the conclusions he ultimately reached, Blanton's (1896:20) concluding remarks reflected the hope and optimism of all archaeologists:

> The author, although not claiming any great proficiency in prehistoric lore, has in the foregoing pages ventured a theory which he believes correct, however he admits that some of his conclusions are conjectural but hoping this contribution to science may elicit thought along similar lines and become a forerunner to a more satisfactory research…

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APPENDIX: 1876 NEWSPAPER ARTICLE

The Daily Graphic, New York, March 17, 1876

Pigmies of a Past Period

(From the *Woodbury* [Tenn.] *Press*)

An Ancient graveyard of vast proportions has been found in Coffee County [Tennessee]. It is similar to those found in White County and other places in Middle Tennessee, but is vastly more extensive, and shows that a race of pigmies [sic] who once inhabited this country were very numerous. The same peculiarities of position observed in the White County graves are found in these. The writer of the letter say [sic]: "Some considerable excitement and curiosity took place a few days ago since near Hillsboro, Coffee County on James Brown's farm. A man was ploughing [sic] in a field which has been cultivated many years and ploughed up a man's skull and other bones. After making further examination they found that there was about six acres in the graveyard. They were buried in a sitting or standing position. The bones show that they were a dwarf tribe of people about three feet high. It is estimated that there were about 75,000 to 100,000 buried there. This shows that this country was inhabited hundreds of years ago."

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NOTES

[1] This form of burial and the majority of the prehistoric remains which constitute the focus of Blanton's remarks are associated with the late Mississippian era Cumberlandia chiefdom (also called the Middle Cumberland Culture) dating from AD 1050 to 1450. Prehistoric fortifications in the region are generally dated from AD 1250 to 1450. A useful - though unfortunately unpublished - summary of the Middle Cumberland Culture in Tennessee prehistory is Smith (1992). Other informative studies of the remains of this era include (but are certainly not limited to) Dowd (1972), Ferguson, ed. (1972), Myer (1928), and Smith (1991, 1993, 1994).

[2] The use of "face" was likely a type setting error on the part of the printer and should have read "feet." There is no evidence to suggest that the late prehistoric population Blanton is describing consistently buried their dead oriented east-west (cf. Broster 1988). Within the region, this practice is more commonly associated with historic era Protestant burials.

[3] Haywood (1823:160-161) discusses this site at some length. He remarks, "On the south side of Forked Deer River 60 miles above its mouth, is a dirt wall parallel to the river, and distant three or four rods from it, where is on the river a deep and steep precipice or bluff, at least 50 feet from the surface of the water. The wall itself is a mile long, and is at present 18 inches or 2 feet high and 10 [feet] in width… Opposite to this is another wall of the same size and length, distant one-quarter of a mile, and in some places 59 poles from the other. At the lower end they approach each other till they come within four poles. Between the walls are 75 acres… At the interval where the walls approach within four poles of each other and between the walls, there is, in the inside of the passage, a mound 8 or 10 feet high which commands the passage, so that all who come in must on the inside turn to the left or right, between the mound and the wall. On the outside of the entrance is a steep bluff of a swamp, winding round the southern wall, and passing in a northwardly direction, near the entrance to the river, with a wide swamp on the eastern side of the bluff. On the inside of the walls are square ones [mounds], 40 or 50 feet in diameter, at different places, which probably were once covered, when the ancients lived there. There are square mounds on the inside, which are not hollow, 14 or 15 feet high... The wall next to the river, at a point equidistant from its end, turns to the river; and from the river by another short parallel wall, runs to a point in the direction of the wall prior to the diversion, and thence is continued in that direction. The two short walls to the river leave an opening from it into the interior of the enclosure, and doubtless was once a covered way for the protection of those who went to the river for water." Jones (1876:104) mentions, but does not further describe, "aboriginal remains" along the Forked Deer River.

[4] This site is described by Haywood (1823:157) as "about 80 or 100 feet square" with opposing bastions "about twelve feet square."

[5] Haywood (1823:161) remarks "At the distance of about four miles southwest from Sparta on the waters of the Cany [sic] Fork, are the remains of an ancient fortification, containing about five acres, perfectly square, the walls being composed entirely of dirt, as appears from the present state of its ruins. Here is a great burying place. The human skeletons discovered here, are remarkable for their gigantic nature. From all that can now be discovered, this must have been a race of men averaging at least 7 feet in height." Jones (1876:104) mentions, but does not further describe, "aboriginal remains" along the Caney Fork River.

[6] Several important late prehistoric sites were situated along the various valleys of the Harpeth rivers. But a small sampling of these include the following: (1) the now destroyed De Graffenreid

earthworks and mounds (40Wm4) on the Big Harpeth River near Franklin in Williamson County (cf. Haywood 1823:131-132, Jones 1876:56-78, Smith 1994, Thruston 1897:35-39); (2) Mound Bottom (40CH8) on the Big Harpeth River in Cheatham County (cf. Haywood 1823:120-123, 417, Jones 1876:36, 138, 142, Kuttruff and Kuttruff 1992, 1996, Lewis, ed. 1948, O'Brien 1977, Peacock 1949); (3) the Hughes earthworks and mound on the northeastern bank of the West Harpeth River about five miles southwest of Franklin (cf. Jones 1876:79-82); and (4) the previously discussed Old Town earthworks and mounds (40Wm2). Concerning the density of large sites in this area, Jones (1876:36) remarked "…that a chain of fortified towns extended in former times all along the Valley of the Big Harpeth." The Mound Bottom site (40CH8) is now encompassed in the Mound Bottom Archaeological Area, a state owned tract, and is legally protected. A particularly useful and clearly drawn Civil War era map depicting the various branches (Big, South, West, and Little) of the Harpeth rivers uncluttered by modern construction and land altering features appears in Proctor et al. (1891-1895:PLATE XXX-2).

7 This appears to be the site described as follows by Haywood (1823:132-133): "In the county of Williamson, on the north side of Little Harpeth, in the lands owned by Captain Stocket northwardly from Franklin, are walls of dirt running north from the river, and east and west. In 1821 they were four or five feet high; and are in length, from the river, between 400 and 500 yards. There is a ditch on the outside, all around, four or five feet in width, partly filled up; and upon the soil which has partly filled up, are black oaks two feet or more in diameter. A spring of excellent water is in the inside of the enclosure, and a branch from it into the river through the interval left by the wall for its passage. The enclosure contains 40 or 50 acres. Three mounds are in the inside, standing in a row north to south, and near to the wall and ditch on the north side of the area. All of these mounds are nearly of the same size. Within the enclosure is a vast number of graves, and the bones very large. James McGlaughlin, who is seven feet high, applied one of the thigh bones found there to his thigh, and it was three or four inches longer than his thigh. The area is in low grounds, which are never overflowed by freshets in the river. The mounds are not more than three or four feet high. They are the relics, in all likelihood, of oval houses which have there fallen; not mounds over dead bodies, or the ashes of dead bodies near mounds for temples in places of worship…"

8 The Old Stone Fort (40Cf1) is a sizable rock and earth walled enclosure at the confluence of the Big and Little Duck rivers in Coffee County, Tennessee. A series of four C14 dates from this site range from AD 30 to 430 (cf. Faulkner 1968:24) and, accordingly, this so-called "fort" was constructed in the Middle Woodland era. In real terms, this means that the Old Stone Fort was built 500 to 1,000 years prior to the epic battles envisioned by Blanton. Even in the event that this venerable enclosure had subsequently been utilized as suggested by Blanton, archaeological investigations within its interior (cf. Cox 1929, Faulkner 1968) have revealed no substantive artifactual evidence of intensive occupation associated with any cultural period. The use of this site is considered to have been ceremonial - not residential - in nature.

9 Blanton's claim that the giants enjoyed the flocks of the beleaguered mound builders further stretches the bounds of reality. With the exception of dogs (*Canis familiaris*), there is no archaeological, ethnographic, or historical evidence for the domestication of other animals within the region by Native Americans.

TOUR OF THE MOSER LEATHER COMPANY AND LOOP ISLAND WETLANDS IN NEW ALBANY, INDIANA

BY

SUNDEA MURPHY
FALLS OF THE OHIO ARCHAEOLOGICAL SOCIETY

Members of the Wabash and Ohio Chapter of the Society for Industrial Archaeology (WOSIA) and the Falls of the Ohio Archaeological Society (FOAS) were presented a tour of the Caldwell/ Moser Leather Company tannery and Loop Island Wetlands of New Albany Indiana by the present owner, Al W. Goodman. Before the tour began, Goodman gave an informative overview of the site history and a brief explanation of the leather-making process (**Figure 1**). He also presented for consideration and discussion his vision of the property development, which would incorporate and preserve the most important architectural, archaeological, and historical aspects of the tannery site.

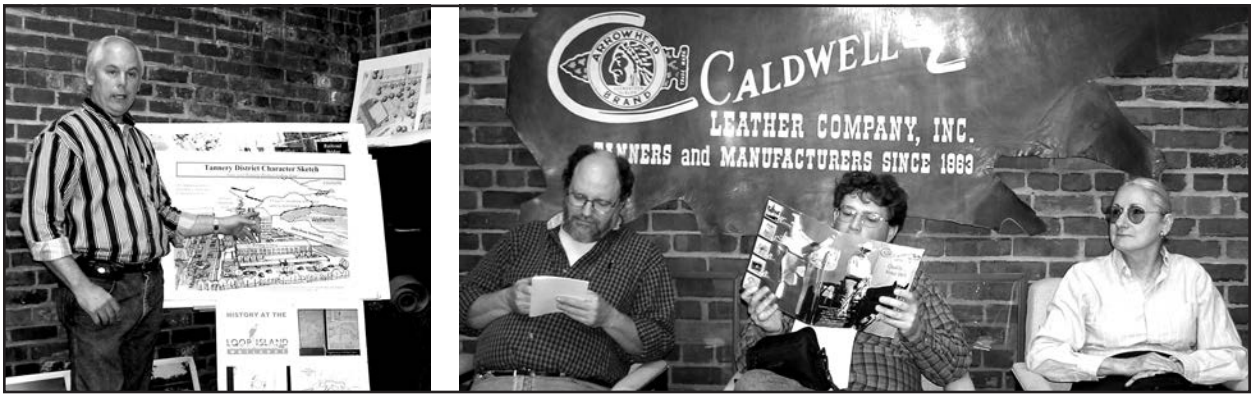


FIGURE 1. AL GOODMAN, LEFT, PRESENTED HISTORICAL INFORMATION CONCERNING THE OLD MOSER LEATHER COMPANY TO WOSIA AND FOAS MEMBERS.

Interesting facts about the Moser Leather Company include:

- At its peak in the 1920s, 75 workers processed up to 1,500 cowhides a day using 180,000 gallons of water (Chaplin 2005).
- The company produced 80% of the leather shoelaces in the United States (Hershberg 2004).
- Some of the brand names were Moser, Hemlock Collar (Indiana Historical Society [IHS] 2004:1), and Indiana Leather. The 1980s acquisition of Moser Leather Company by Caldwell brought in the Arrowhead Leather brand.
- Clientele included G. H. Bass & Co., Klein Tools Inc., and Harley-Davidson (IHS 2004:2).
- Leather from this tannery was used on *Columbia*, the first space shuttle (Chaplin 2005).

Part of the tannery site includes the 19-hectare (47-acre) protected wildlife refuge, Loop Island Wetlands, that contains over 275 identified bird species (Knob & Valley Audubon Society 2004:2). Loop Island was so-named for the island formed from the natural closing off of a meandering

"loop" in Silver Creek near the mouth of the Ohio River (**Figures 2** and **3**). Goodman pointed out nearly forgotten, but historically significant, items of interest that involve the Loop Island area:

> Ancient aboriginal occupation - The area provided a rich and diverse blend of floral and faunal resources for the inhabitants. Numerous artifacts from across all ages have been found in the area.
>
> Dueling grounds - Dueling was illegal in the states by the early nineteenth century, so disputes were taken across the Ohio River into the Western Territory. A most notable event that occurred at Loop Island was the duel between Henry Clay and Humphrey Marshall (Coulter 1933:309-310):
>
> The renown Henry Clay and Humphrey Marshall, another Kentucky state representative, on January 19, 1809 "...journeyed across the Ohio River at Shippingport, below Louisville, to 'an eligible spot' of ground on the Indiana shore immediately below the mouth of Silver Creek, in Floyd County... to settle with pistol and ball what had started with oratory back in the statehouse at Frankfort," wrote historian J. Winston Coleman, Jr. [Gapsis 2005].
>
> Shipbuilding - This area at the mouth of the Ohio River would have been a prime location for shipbuilding. It is thought Loop Island would have been the most likely spot Aaron Burr had boats constructed. These boats were intended for troop transportation and supply use for what historians call the *Spanish Conspiracy*, a plot which landed Burr in jail for treason.
>
> Glass factories - The sand in this area was ideally suited for glass making, so many early glass factories were located near Silver Creek (Cox 1874:181). The first plate glass sold in the United States was manufactured nearby (Miserez 1953).

After the tannery tour, WOSIA and FOAS members finished the day with an enjoyable stroll through the beautiful natural setting of the wetlands (**Figures 4** and **5**).

FIGURE 2. MOUTH OF SILVER CREEK AS IT APPEARED IN BROOK'S 1806 MAP OF THE FALLS AREA.

FIGURE 3. CURRENT AERIAL VIEW OF THE MOUTH OF SILVER CREEK (FROM GOOGLE EARTH).

FIGURE 4. MOSER TANNERY AND LOOP ISLAND.

FIGURE 5. LOOKING AT THE OXBOW SOUTHWARD TOWARDS THE OHIO RIVER.

BRIEF DESCRIPTION OF THE LEATHER-MAKING PROCESS

One of the earliest references to the use of leather comes from the *Holy Bible*, Exodus 36:19: "And he made a covering for the tent of ram's skins dyed red, and a covering of badger's skins above that." Ancient Egyptian tomb paintings ca. 5000-3000 B.C. depict leather-making (Reed 1972; Columbia Encyclopedia 2005). It was said Thebes was the leather-producing center of the world (Kennedy 1857:14). Writings of Herodotus and Ovid frequently mentioned the sophisticated art of preserving and dressing leather possessed not only by the Egyptians, but by many peoples encountered in their travels about the known world (Maynard 1871:54). Tanned leather artifacts thousands of years old have been found in archaeological excavations in nearly every area of the globe (Kennedy 1857:206; Reed 1972). Though processed with various substances, it is safe to say that the practice of tanning animal hides has probably existed almost as long as Man himself.

In fact, tanning has been considered an essential skilled trade since ancient times. And, throughout all that time, the methods have changed very little:

> …historically, the tanner had never tarried "long behind the first occupants of a new town [Bishop 1861]." However, the role of this essential artisan has been largely neglected. The techniques of his trade are almost forgotten, and evidence of his early activities is widely dispersed. ...His trade flourished, and leather was in great demand from the time of first settlement to comparatively recent times. Nevertheless, tanning techniques remained nearly unchanged until late in the nineteenth century [Welsh 1964].

The word *tanning* has come to mean the entire process of converting a freshly skinned animal hide to a finished leather product. Actually, tanning is only one part of a larger, more complicated and time-consuming process. Complete conversion from cowhide to leather involves four or more major steps, at least a month of time (five to seven months in the 1860s (Jarnagin 2005:2)), voluminous quantities of water and chemicals, and equally voluminous quantities of waste by-products.

There were two primary types of chemical compounds used to tan leather in the nineteenth century. One type, still used by 90 percent of the tanning industry today, involved chromium compounds that are poisonous to humans and devastating to the ecology (U.S. Environmental Protection Agency [USEPA] 1997:9). The other type of chemical compound used was known as vegetable tannin. *Tannin*, or tannic acid, is an acrid substance contained in certain tree bark and many other woody plants (Jarnagin 1997). Crushed bark or plant matter was placed with water in huge *leaching drums* (**Figures 6** and **7**), and tannin leached into the water to form a

yellowish-brown *liquor*. Tannic acid penetrated the hide as it soaked in the liquor, reacting with the collagen fibers, giving it strength, making it bacteria-resistant, and imparting the familiar brown color associated with finished leather goods. Though tannin waste was far less harmful to the environment than chromium waste, the copious amounts of smelly effluent discharges must have given one a perceived notion of dangerous contamination. The discharge ponds were sometimes nicknamed the “blood ponds” because the tannin effluent supported the growth of red algae and because of the associated foul odor (Chaplin 2005; Hershberg 2004).

Hemlock or chestnut oak was the tanner’s bark of choice for tannin extraction (Jarnagin 1997, 2005:1). In 1867, it was reported that 80 percent of all American hides were tanned with hemlock bark (Dussance 1867:428). Hemlock trees east of the Mississippi suffered near obliteration due to their use in tanneries. Because of this domestic tree depletion, *quebracho* tree bark was harvested and imported from South America. This bark has been used over the last century (almost exclusively since 1870) as replacement raw material for tannin extraction (Jarnagin 1997). The bark was usually shipped in whole pieces, then ground in *bark mills* at the tanneries (**Figures 8** and **9**). Quebracho tree bark was used by the Moser Leather Company (IHS 2004:2). Since the Moser Leather Company used vegetable tannin, it is this tanning process that will be described herein.

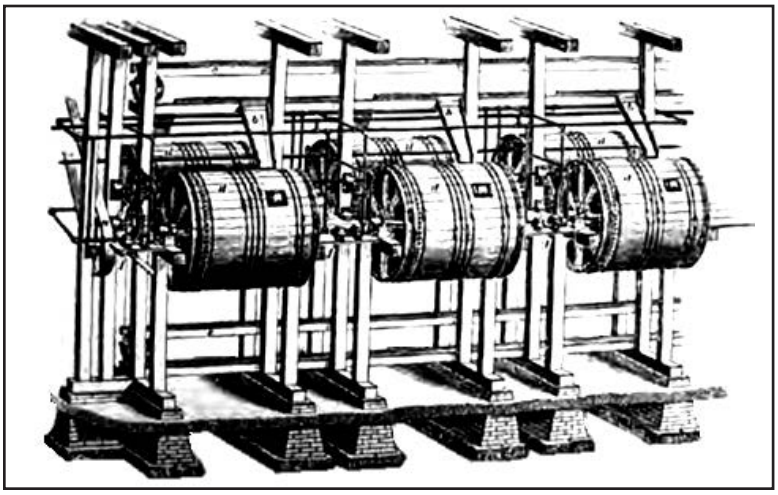


FIGURE 6. LEACHING DRUMS.
(ITC 1902)

FIGURE 7. LEACHING DRUMS USED BY MOSER LEATHER COMPANY.

FIGURE 8. HEMLOCK BARK.
(Courtesy of David Jarnagin)

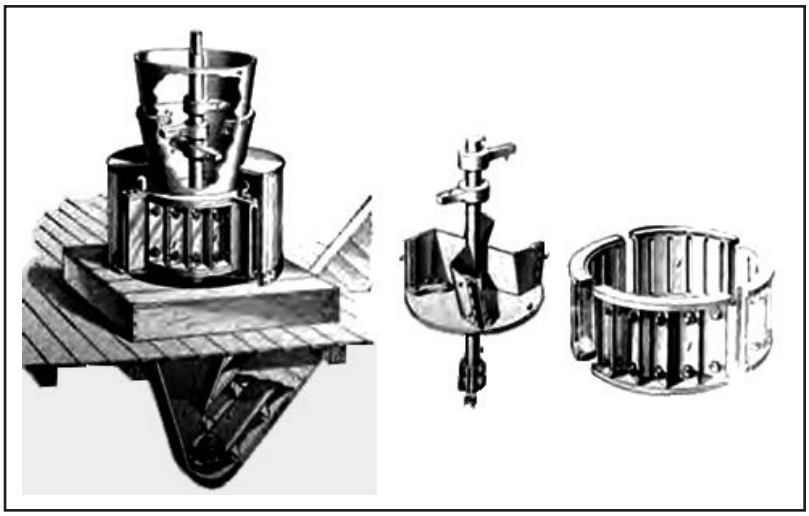


FIGURE 9. BARK MILL.
(International Library of Technology [ITC] 1902)

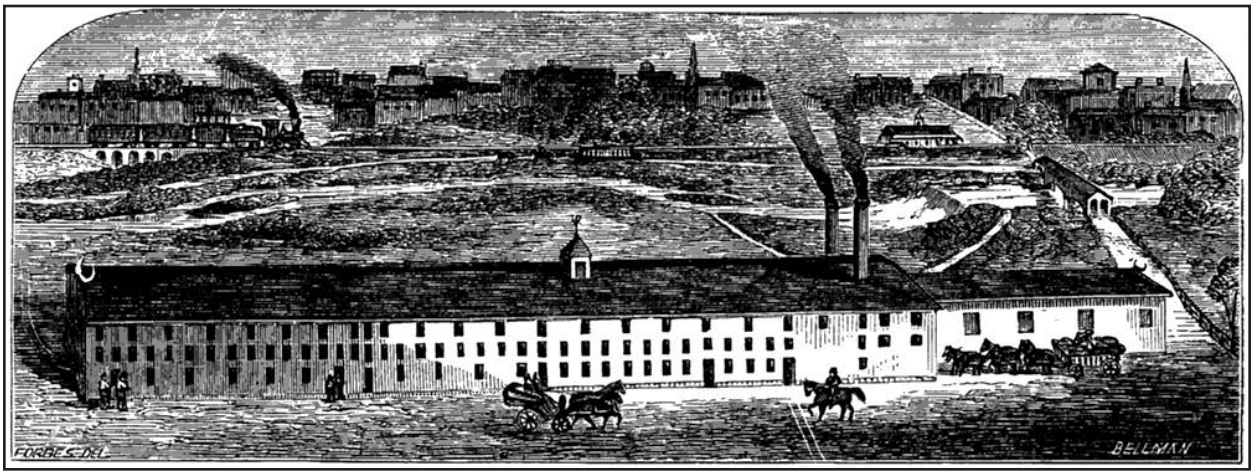


FIGURE 10. TYPICAL NINETEENTH CENTURY TANNERY, LOCATED ON THE SCHUYLKILL RIVER (KENNEDY 1857:194). HAVING VISITED MANY TANNERIES, NEWHALL (1885:274) DESCRIBED THEM AS "…GENERALLY AN UNADORNED WOODEN STRUCTURE; INVARIABLY PAINTED LEATHER-COLOR TO CORRESPOND WITH THE EXHAUSTED BARK WHICH, WITH LAWN-LIKE SMOOTHNESS, COVERS THE LAND ABOUT THE BUILDINGS. ITS INTERIOR, WITH BEAMS UNFINISHED, HAS A DOUBTFUL-LOOKING FLOOR, AND THE PLANKS LOOK AS TREACHEROUS AS LOOSE BRICKS IN A PHILADELPHIA SIDEWALK."

Hide Curing and Transport

Hides were purchased from large cattle slaughterhouses from as far away as Kansas and Texas. Because the hide starts to decay immediately following the skinning, preservation was required for transport. To retard decay, hides at the slaughterhouse were immediately immersed in strong saline solution or sprinkled with dry salt (4.5 kilograms or 10 pounds of salt per skin), as they were removed from the animal. The salt stopped the putrefaction and preserved the hide for the long rail shipment to the tanneries. The hides were shipped in boxcars, either rolled up and tied in a dampened state, or drained, pressed together, and placed flat in great stacks.

Beamhouse Processes

The first step after arrival at the tannery *beamhouse* (**Figure 11**) would be to soak the hides in water to remove the saline. After saline removal, the hides were placed in pit with a weak lime solution for a few days to accelerate hair and flesh removal (**Figure 12** and **16**). The next step was the *beaming* or unhairing of the hides (Newhall 1885:274). This process derived its name from stretching the hides over sturdy wooden beams during the hair removal process (**Figure 13**). Any remaining flesh was scraped away with *drawknives* (**Figure 14** and **15**).

After beaming, the hides were trimmed and placed into large, rotating wooden drums that were lined inside with pegs. Water was placed inside and, as the hides and water tumbled and turned in the drum, excess lime was removed. An added benefit of this process was the stiff hides would be softened by striking the pegs as the drum turned (Newhall 1885:275).

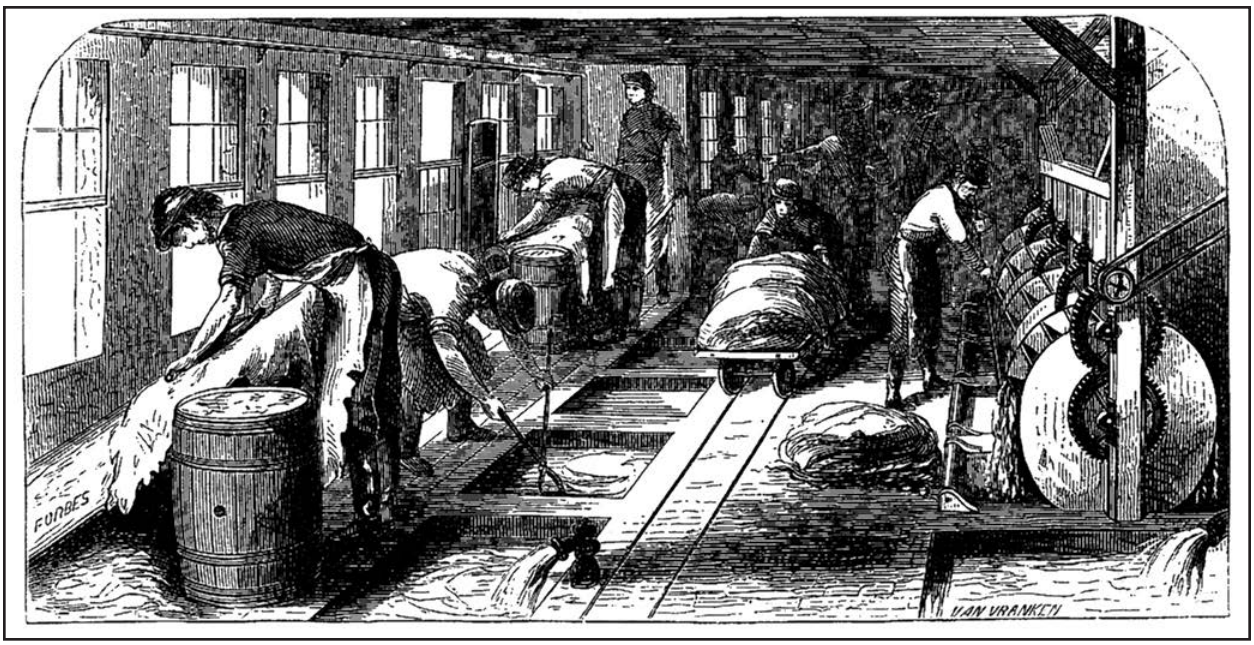


FIGURE 11. MID-NINETEENTH CENTURY BEAMHOUSE OPERATION.
(Kennedy 1857:80)

FIGURE 12. LIMING PITS IN AN MID-EIGHTEENTH CENTURY TANNERY.
(Diderot 1771)

FIGURE 13. USING DRAWKNIVES TO UNHAIR HIDES. (Newhall 1885:277)

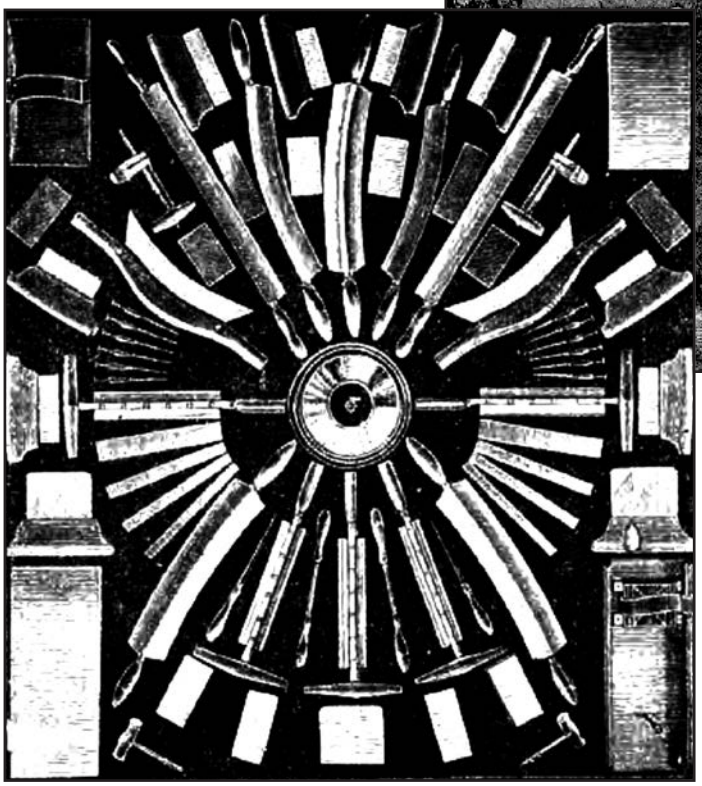


FIGURE 14. TANNERY TOOLS. (Welsh 1964)

FIGURE 15. MODERN DRAWKNIFE.

Tanyard Processes

The following step was called *drenching*, whereby the hides were placed into vats with circulating paddle wheels (**Figure 17**) and a *bating* solution of high ammonia-containing compounds, usually animal excrement or urine (Kennedy 1857:91; Maynard 1871:54; Newhall 1885:275-276). Rotating drums were also used for this process (**Figure 18** and **19**). This step prepared the now nearly colorless, whitish hide for "accepting" the tanning liquor.

The actual time required for the tanning process varies according to source, but it included a series of soakings in the tannin liquor anywhere from a few weeks to a few months. It took an average of three weeks for tannin to penetrate to the center of a cowhide of normal thickness (USEPA 1997:11).

FIGURE 16. LIMING/TANNING PITS AT MOSER LEATHER COMPANY.

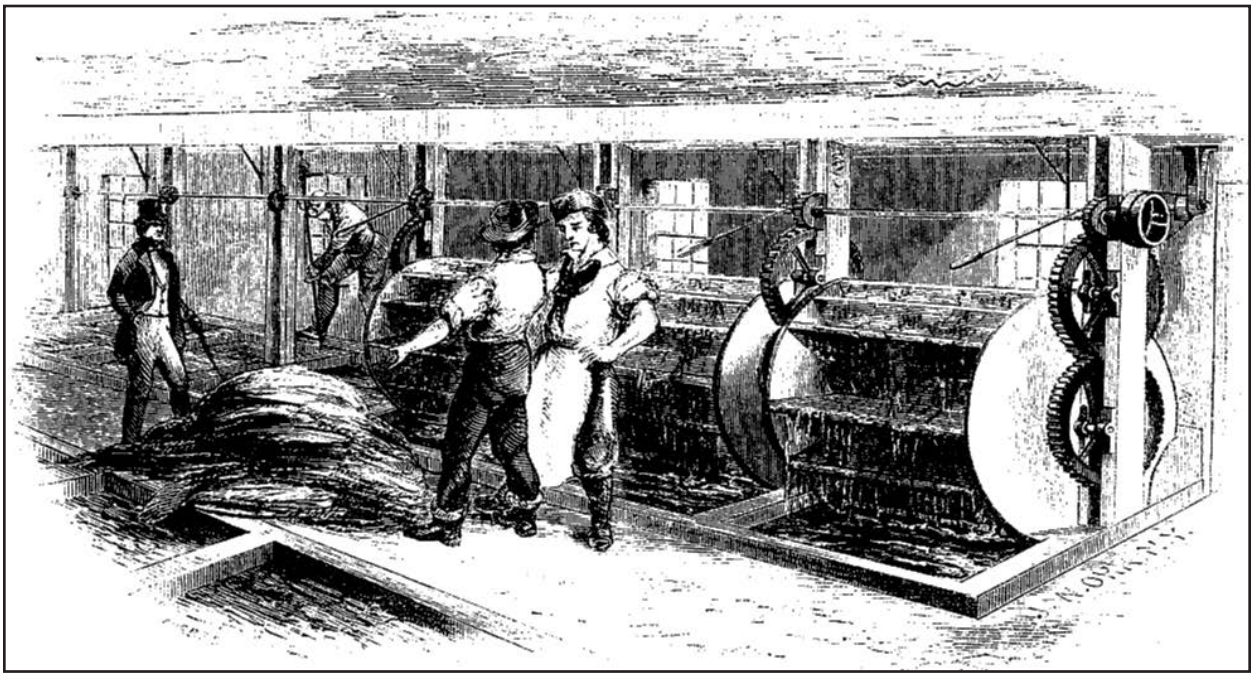


FIGURE 17. MID-NINETEENTH CENTURY BATING OPERATION.
(Kennedy 1857:120)

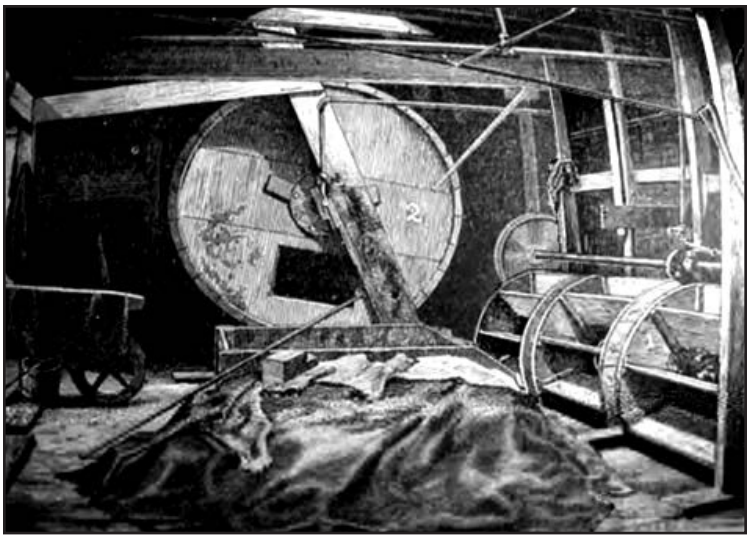


FIGURE 18. BATING EQUIPMENT.
(Davis 1897)

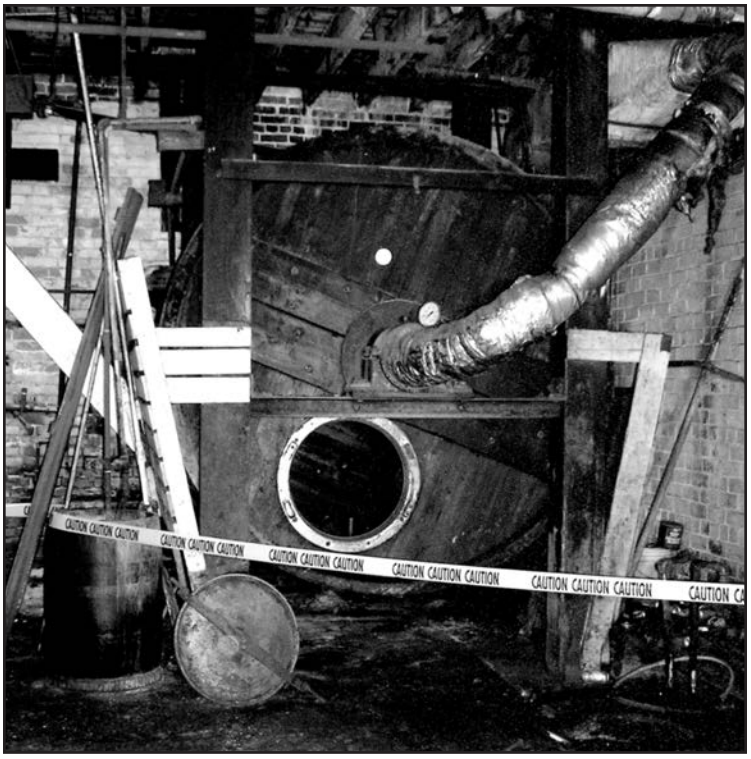


FIGURE 19. BATING DRUM AT MOSER LEATHER COMPANY.

After tanning, the hides were hung to dry (**Figure 20**). Once dry, they were split into layers by mechanical means. The *splitting* machine had rollers that fed the hide with pressure against long, sharp blades (**Figure 21** and **22**). A typical cowhide would have measured about five millimeters thick. The top of the hide (hair side), called the *grain leather* (**Figure 23**), was sliced to about one millimeter thickness (AFHA 2006:5). The remaining layer was called *split leather*. Both layers were once again placed into the peg-lined drums for softening, in preparation for the last soaking in the tannin liquor.

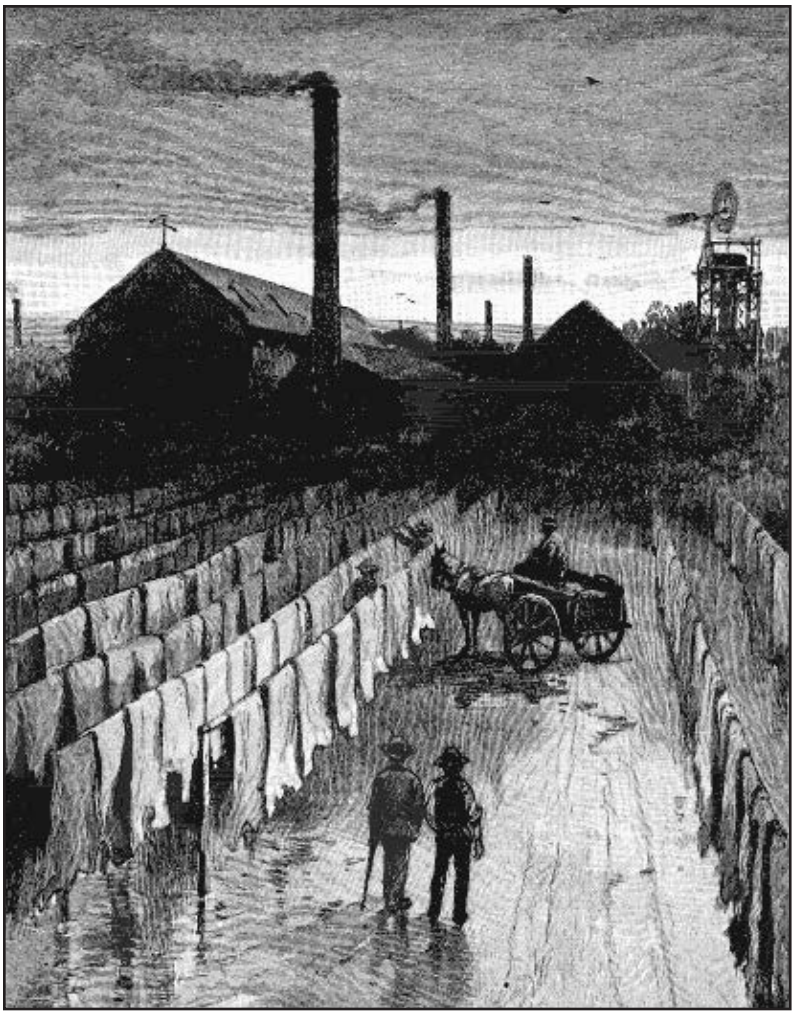


FIGURE 20. HIDES DRYING AT A NINETEENTH CENTURY TANYARD.
(Newhall 1885:275)

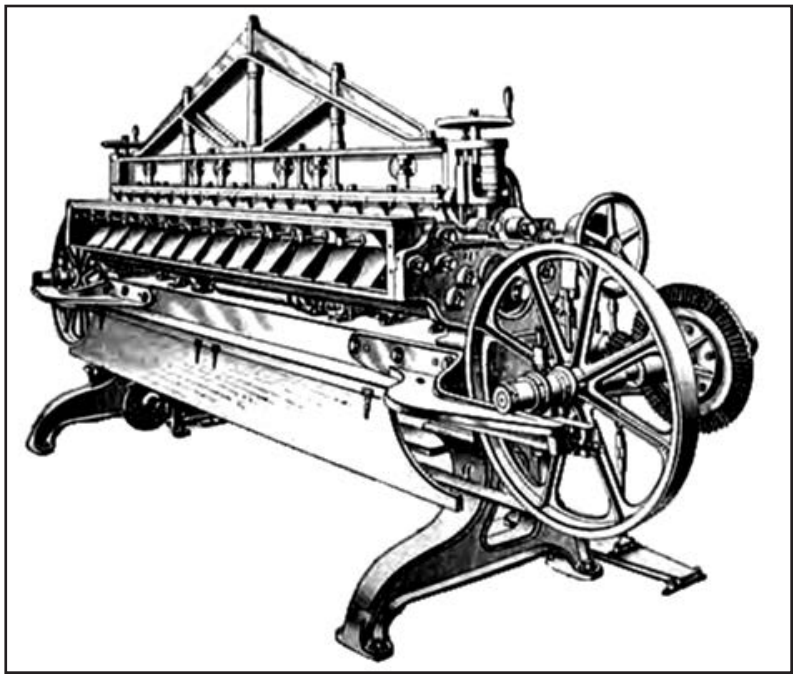


FIGURE 21. HIDE SPLITTER.
(ITC 1902)

FIGURE 22. ON THE TOUR, AL GOODMAN POINTED OUT THE MOSER HIDE SPLITTER.

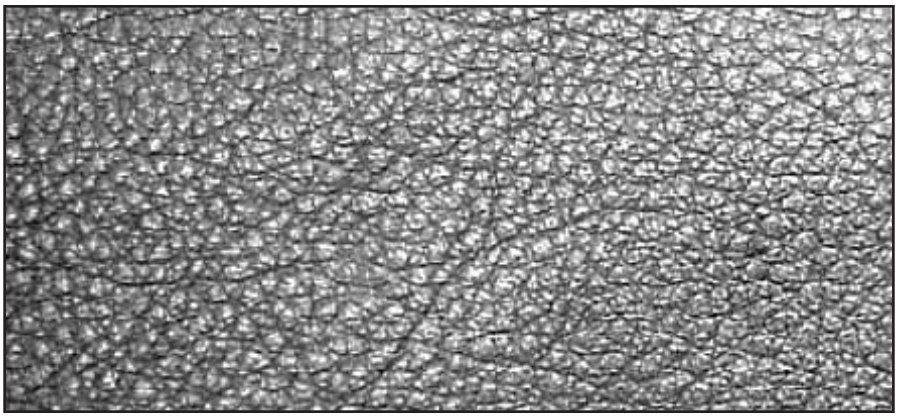


FIGURE 23. LEATHER GRAIN, SIMILAR TO HUMAN FINGER-PRINTS, IS UNIQUE TO EACH INDIVIDUAL HIDE.
(AHFA 2006:6)

Finishing Processes

The hides were next taken through a *currying* step; that is, stretching the hides to achieve an even thickness and consistency. Until the mid-nineteenth century, currying, like the other processes, was an intensely manual process (**Figure 24**). *Scouring* machines were invented to feed the hides between pressured rollers that forced out the surface wrinkles and removed any uneven areas (**Figure 25**). Scouring completed, the leather was nearing the final processing. This included additional cycles of tanning (if necessary), drying (**Figures 26** and **27**) and stretching steps, and the application of tallow or some other emollient. Finally, the leather was ready for trimming, sorting, and grading. Obtaining hide measurements (**Figure 28**) was the last step before storing the leather awaiting sale.

FIGURE 24. MID-NINETEENTH CENTURY CURRYING SHOP.
(Kennedy 1857:166)

FIGURE 25. SCOURING MACHINE AT MOSER LEATHER COMPANY.

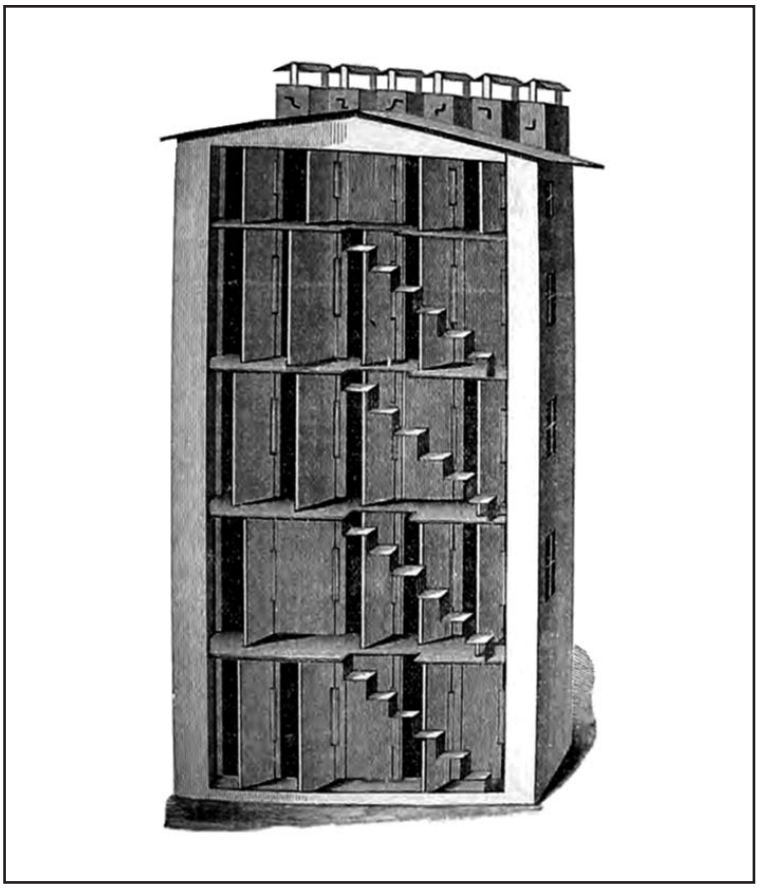


FIGURE 26. NINETEENTH CENTURY DRYING HOUSE.
(Schultz 1876)

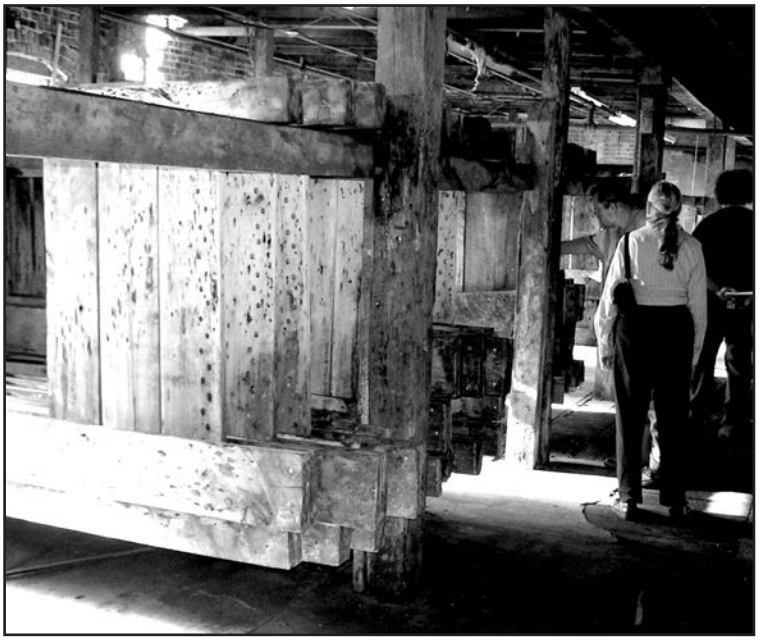


FIGURE 27. MOSER DRYING RACKS.

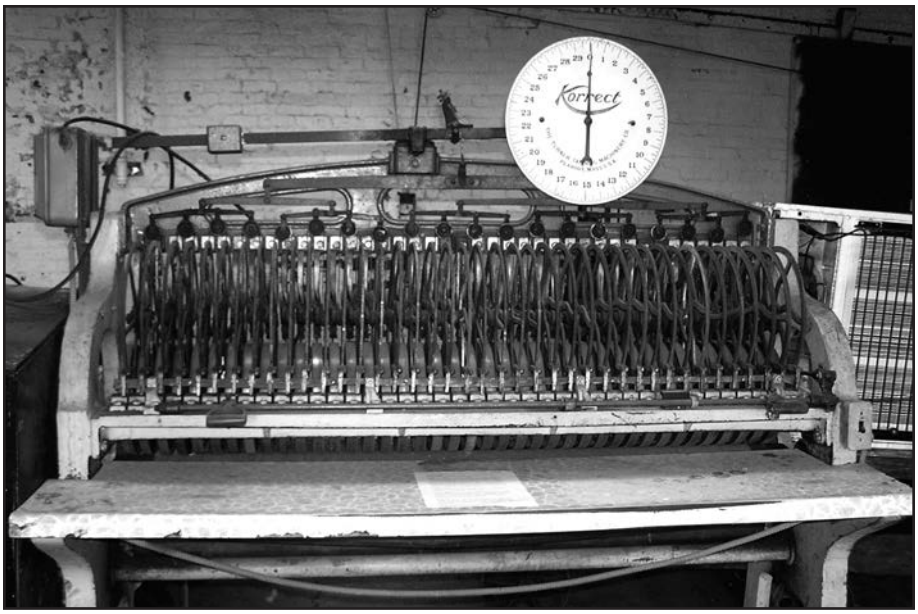
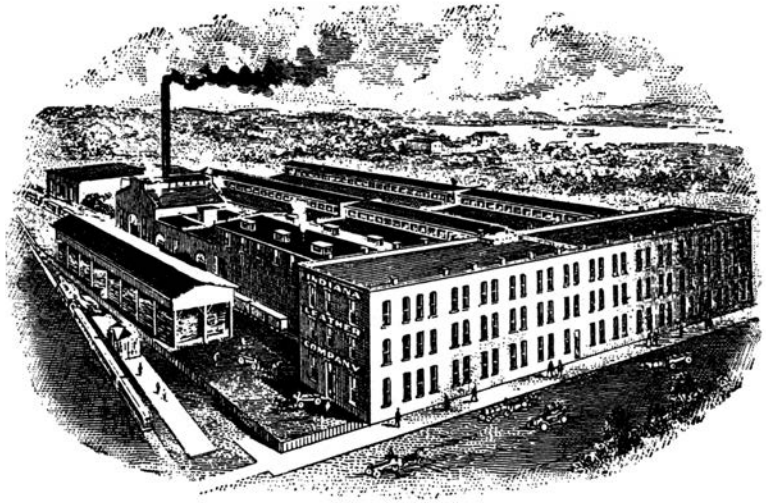


FIGURE 28. IRREGULARLY SHAPED HIDES WERE FED THROUGH THIS MEASURING MACHINE TO OBTAIN SQUARE FOOTAGE. THE MACHINE WORKS BY EACH MAIN WHEEL TURNING AGAINST THE LEATHER, PULLING CHAINS AND SMALLER WHEELS IN THE BACK OF THE MACHINE. THESE SMALLER WHEELS AND LEVERS ADD THE AMOUNT EACH MAIN WHEEL TURNED AGAINST THE LEATHER TO TOTAL THE SQUARE FOOTAGE ON THE DIAL. THIS MACHINE WAS USED AT THE MOSER LEATHER COMPANY FOR OVER 100 YEARS AND THE MEASUREMENTS WERE NEVER CONTESTED BY CUSTOMERS. ITS ACCURACY HAS BEEN CALCULATED AND FOUND TO BE WITHIN THE SAME RANGE AS THAT OF MODERN COMPUTER-AIDED EQUIPMENT.

THIS UNIQUE LEATHER ARTFORM WAS CREATED BY A TECHNIQUE KNOWN AS *CUIR-BOUILLI*. THIS WAS ACCOMPLISHED BY BOILING LEATHER BRIEFLY, THEN QUICKLY MOLDING IT BEFORE COOLING. AS THE LEATHER COOLED, IT HARDENED TO A PLASTIC-LIKE STRUCTURE. THIS SAME METHOD WAS USED FOR CREATING ANCIENT LEATHER BODY ARMOR, WHICH WAS STRONG ENOUGH TO RESIST THRUSTS OF STEEL WEAPONS.



1913 PHOTO OF GEORGE MOSER AND SKETCH OF THE INDIANA LEATHER COMPANY.

(From the *Souvenir History of New Albany, 1813-1913*, George L. Russell, 1913.)

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What is your age group?

- ☐ 6-12
- ☐ 13-18
- ☐ 19-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ Over 65

How would you describe yourself?

- ☐ Professional Archaeologist
- ☐ Amateur/Collector
- ☐ Student (Elementary to Middle School)
- ☐ Student (High School)
- ☐ Student (College)
- ☐ Other Professional
- ☐ Interested Public

Do you have prior archaeological experience?

- ☐ None
- ☐ Occasional Volunteer
- ☐ Some Professional Training

Would you be interested in serving as an officer for FOAS?

- ☐ Yes
- ☐ No

Any additional information or comments?

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