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Mather family berry picking in the hollow around 1913.

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Contents

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Layout	Gian Carlo Cervone

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Subscription by membership in NYSAA. For membership information write:
President Sherene Baugher sbb8@cornell.edu or
Vice President Lisa Anselmi anselmlm@buffalostate.edu

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Life in the Hollow: Historic and Archaeological Research at Dixon Hollow, Hemlock, New York

Kristi J. Krumrine, St. John Fisher College and State University of New York at Geneseo

This paper presents the results of archaeological and historic research conducted at the Dixon Hollow Site, in Hemlock, New York. The archaeological excavations and analysis were conducted from 2003 through 2010 by St. John Fisher College and SUNY College at Geneseo field school students, under the direction of the author. Historic research was conducted at the Livingston County Historian's office, the Livingston County Surrogate Court, the Livingston County Clerk's office, and the Rare Books, Special Collection, and Preservation department at the Rush Rhees Library, University of Rochester.

The History of Dixon Hollow and the Canadice Outlet

Dixon Hollow was a small, rural hamlet located on the eastern border of Livingston and Ontario Counties. Situated along the Canadice Outlet, which flows through the valley between Bald Hill and Canadice Mountain, Dixon Hollow has been abandoned for nearly one hundred years. The outlet descends at a steep grade from Canadice Lake to Hemlock Lake, and, in areas where it receives mountain streams, creates rushing waters in an "immense mountain spring" (Waite 1883, as quoted in Leonard and Isler 2004:3). Because of the high-energy water source that the outlet provided, this area was an ideal place to set up additional mills connected with the nearby town of Hemlock. Dixon Hollow was occupied for a relatively short period of time, beginning in the late 1820s. After completion of a pipeline in 1875, the City of Rochester diverted water from the lakes to be used as drinking water for its growing population. Concerned about contamination of the water supply, the City of Rochester completed its purchase of the properties located within the immediate vicinity of the lakes and the surrounding watershed by 1920. Although nearly forgotten by most residents of Hemlock, it is through the contributions of oral history, historic documents, photographs, and the archaeological record that the important history of Dixon Hollow and the surrounding outlet has been learned.

The history of the Canadice Outlet begins with the Native American groups who first inhabited its hills and valleys, including the most recent occupants, the Seneca Iroquois (Deats n.d.). Native Americans, and European Americans later, were attracted to the beautiful waters and abundant resources. D. Byron Waite, the first resident to publish an account of Hemlock's history (1883:23), remarked that "whoever has passed the shore or over the surface of this body of water, could not fail to be [favorably] and permanently impressed with its numerous indentations or coves...." An early resident of Hemlock, W. H. C. Hosmer (Deats n.d.), passed on the oral tradition of the conflict between the Munsee and Mengwe tribes who lived in the area between A.D. 1350 and 1375. One night, the Mengwe attacked the Munsee, killing everyone except Onnolee, the daughter of a prominent leader, who was taken as a Mengwe captive. According to the story, "Mickinac, the Mengwe leader, tied Onnolee to his belt before she followed the war party to their home. As the group stopped to rest, Onnolee stole her captor's knife, cut herself free, and thrust the weapon into Mickinac's side. With arrows racing by, she fled to the shores of Canadice Lake, and threw herself into the waters below to meet a watery grave" (Leonard and Isler 2004:3). A local legend tells of the ghost of Onnolee who haunts the lake, "As moonbeams stole glances to kiss the tiny waters of the lake, the sainted form of the once beautiful Onnolee could be seen to rise from its watery home, and either vanish in upper arm or return again to the bosom of the deep" (Waite 1883:15). The Native American presence in the area was greatly diminished by the time of General Sullivan's Campaign against the Iroquois in the summer of 1779 (Deats n.d.).

For most of the nineteenth century, the area around Hemlock Lake was officially connected to the town of Livonia, located just northwest of the lake and first settled in 1789. In 1795, Philip Short settled in Hemlock Lake as the hamlets of Hemlock and Dixon Hollow were then called. Hemlock did not receive its own post office and name until 1895 (Unknown author 1989). "Dixon Hollow" seems to be a colloquial name; the only document found where this name is used is a deed dated to 1890, wherein a road (Dixon Hollow Road) is described as "leading through what is known as Dixon Hollow to the Village of Hemlock Lake" (Livingston County Clerk, Grantors and Grantees Deeds 1890). Letters written to Dixon Hollow residents were addressed to "Hemlock Lake" and referred to the residents as "the folks in the hollow."

Early settlers moved to Dixon Hollow as a result of the growing mill industry of Hemlock. The lake itself was a great commercial lumber "highway," providing an "interme-

diate link between the pine and hemlock lands of the south, and the harder varieties of timber at the north, and the bread stuffs of the north finding a ready market in the southern woods" (Waite 1883:23). Logs were transported across the lake by floating in the summer and by rolling across the ice in the winter. On May 6, 1815, after several mills were erected at both ends of Hemlock Lake, a public highway (now Route 15A) was created (Waite 1883), which connected Hemlock to Rochester economically and socially. Later, flat boats called "scows" were used to transport lumber more safely and efficiently (Deats n.d.; Leonard and Isler 2004). As noted by an observer of the day, "The whole foot of the lake in my recollection was piled up with lumber for sale. Teams from all parts of the country were there every hour of the day loading up with lumber" (Waite1883: 23). Brickmakers, blacksmiths, and cobblers also came into the area, largely as a result of the milling industry (Leonard and Isler 2004).

A man by the name of Higbly erected the first sawmill, near the foot of Hemlock Lake in 1795, and Thomas Morris built the first grist mill, located at the bottom of the outlet in 1800. The Dixson family, namesake of Dixon Hollow, erected two mills alongside the Canadice outlet around 1840 (Canadice Chronicle 1993). It is around one of these mills that the Dixon Hollow settlement arose. There is an evident archaeological residue associated with Dixon Hollow, including old roadbeds that are overgrown with trees and other vegetation, and foundations. One of these roadbeds represents what is left of Dixon Hollow Road, built by the Spencer family, which ran alongside the outlet (Figure 1). A second road, which was closed by 1910, ran from Canadice Lake Road down to the outlet (Figure 1). Dixon Hollow was home to a general store and three mills, as well as numerous milling and farming families. These families cultivated timothy, wheat, corn, beans, potatoes, oats, apple orchards and berry patches (New York State Census Records: Agricultural Statistics 1890).

By the 1870s tourism was the second most important economic draw to Hemlock, next to milling. In the summer months, people came from Rochester and other regions across New York State to relax at hotels like The Port House, The St. James, and the three-storied Jacques Hotel (Deats n.d.) The first steamboat on the lake, called the "Seth Green," was capable of carrying forty passengers from one end of the lake to the other to attend hotel dances and visit the numerous cottages. Other boats followed, including H. J. Wemett's "Corra Belle." From Rochester, tourists could take a train into Hemlock, near the north end of the lake. In addition to the cool waters of the lake, people came to Hemlock to attend the "Little World's Fair," home of the first Ferris Wheel in the United States. The Hemlock Fair still draws people from all over the Rochester area and the fairground itself was listed on the National Register of Historic Places in 2000.

Despite the success of the milling industry and the tourism of Hemlock Lake, the growing population in Rochester and the need for safe drinking water led the city to purchase the lakes and surrounding land. The city began negotiations to purchase Hemlock and Canadice Lakes as early as 1858, and pipeline conduits of water flowed into the city by 1875 (Deats n.d.). This pipeline was a relatively cheap method of obtaining clean drinking water, because the lower elevation of Rochester allowed the water to flow via gravity rather than with pumps (Don Root, personal communication). Between 1912 and 1918, a conduit from Canadice to Hemlock Lake was built. It had a carrying capacity of 42 million gallons of water per day by 1918.

By 1885, after numerous typhoid outbreaks in other states, the State Board of Health became concerned about the quality of the water from Hemlock and Canadice Lakes and surrounding watershed. In an 1885 editorial from a Rochester newspaper, it was reported that the State Board of Health found "most of the nearly one hundred cottages and hotels are located within a hundred feet of the water" and that "in many places the privy vaults are in the sub-soil water, so that their contents are dissolved and carried into the lake through the gravel, which has little or no filtering power, so far as infective material is concerned" (Union and Advertiser 1885). The editorial also went on to admonish Livingston County officials who may protest measures taken to protect the water supply, going so far as to say that "should an epidemic be produced in Rochester, by pollution of Hemlock Lake, Mr. Kidder, M. Scott, his petty magistrate, and the polluters of the water, would soon feel the vengeance of an outraged people" (Union and Advertiser 1885). The properties directly adjacent to the lakes were purchased first; and by 1920 the properties located along the outlet in Dixon Hollow were sold to the City of Rochester and abandoned.

The Folks in the Hollow

There were many families living in Dixon Hollow from the early part of the nineteenth century through 1920. This paper focuses on the families that are associated with the major occupations of the structures that have been excavated by this point in time. All of the families are listed in Table 1, while the structures located in Dixon Hollow are shown in Figure 1. In some cases, the maps (Figures 2-5) are not comprehensive in that structures that are known to have existed are not shown. The Mather, Dixson, and Adams families are discussed in detail below.

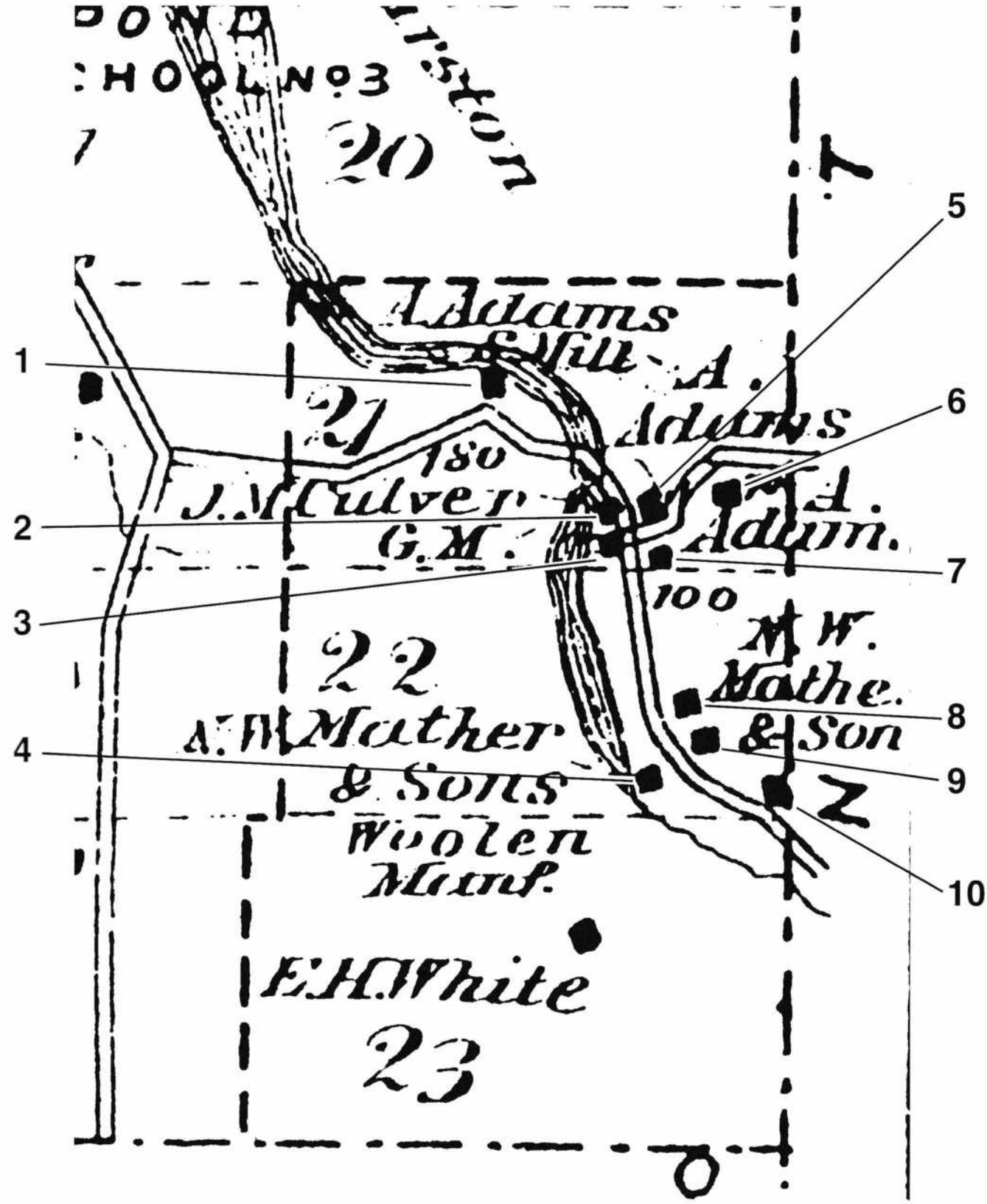

Figure 1. Portion of 1872 map (southeast corner) showing the structures at Dixon Hollow. **1.** Albert Adams Saw Mill; **2.** Dixson Grist Mill; **3.** Unknown Structure; **4.** Mather Mill; **5.** Dixson House; **6.** Albert Adams House; **7.** Amos Dixson House; **8.** Grove & Phyla Mather House; **9.** Norman & Nancy Mather House (later Olin & Gladys Mather House); **10.** Old Mather House; Dixon Hollow Road running from Old Bald Hill Road to Canadice Lake Road; West-East Road leading from Dixon Hollow Road to Canadice Lake Road.

Table 1. Occupants of Dixon Hollow listed on maps.

1852	*Maps of Livingston County, New York.* Philadephia: Smith & Gillette Publishers.	Grist Mill Amos Dixson Norman W. Mather Wool factory
1858	*Gillette's Map of Livingston County, New York.* Philadelphia: Jno. E. Gillette, Publisher.	W. Potter (William) Amos Dixson Estate Norman W. Mather (2 houses) Wool factory H.K. Steele (old Mather house) Mrs. Wiburn (Judith)
1872	*Atlas of Livingston County, New York.* New York: Beers & Company.	A. Adams S. Mill A. Adams (Albert and Azel) J.M. Culver Grist Mill Norman W. Mather & Son (2 houses and wool factory) E. H. White (Edward)
1902	*New Century Atlas of Livingston County, New York.* Philadelphia: Century Map Company.	E. Sellinger (Edward Salinger) M. Woodruff (Mary) Grove Mather Tub Factory G. E. Daniels (George)
1910-11	*Survey in Four Consecutive Parts of Territory Between Hemlcok and Canadice Lakes and Along Canadice Outlet For Devising Betterments in Rochester Water Works Supply System.* Made for City of Rochester Dept. of Engineering 1910-1911, by C.N. Munger.	Mrs. Lucy Salinger Mrs. Grace Welch Mather City of Rochester (area along outlet b/t bridge and Mather mill)

The Mather Family

Norman Wells Mather was one of the first residents to settle in Dixon Hollow. His wool factory and his first house in Dixon Hollow (Figure 1: structures 4 and 10, respectively) are both listed on the 1852 map. It is likely that Norman Mather settled in the Livonia area sometime around 1827, as a young man of about 23 years (Table 2). However, the earliest deed for Norman Mather shows that he bought the property where the house is located in 1832. Norman Mather was born in 1804 to Eusebius Mather and Susannah Wells. He sometimes listed his place of birth as Richmond, Ontario County (the area just east of Hemlock Lake) on different censuses, but more often listed Saratoga County, New York, as his place of birth. His parents were born in Connecticut and likely moved west into New York as part of the influx of settlers from the northeast states. Norman's father died when Norman was only seven years old and his mother when he was fifteen. His brothers, David and John, also settled in Livingston County.

It is unclear when Norman first married, but the first wife found on the Federal Census Records is Jane Ashley, who Norman married in 1830. Norman and Jane had at least five children together. The oldest, Emeline, was born in 1832, and was followed by Grove, Ashley, John, and Jane (also known as Jennie). Grove, born in 1834, grew up to work with his father in the wool factory and will be discussed later. Tragedy struck Norman and his family several times during these early years. The first such documented tragedy was the loss of Norman and Jane's two year old son, Ashley, in 1839. Perhaps even more devastating to the family, however, was the death of Norman's wife, Jane, in August of 1842. Jane died just four days after giving birth to daughter Jennie, so it is likely that she died from compli-

Table 2. United States Federal and New York State Census Records—Norman Mather Family.

Census	Household Members	Notes
1830-US Federal	Norman Mather (head) 2 males 20-30 yrs 1 female 20-30 yrs	• Other male likely to be one of Norman's brothers. • Female is likely to be Norman's wife Jane Ashley.
1840-US Federal	Norman Mather (head) 1 male 30-40 yrs 1 female 30-40 yrs 1 male 15-20 yrs 1 female 5-10 yrs 1 male 5-10 yrs 1 male under 5 yrs	• 15-20 yr old male unknown. • Children are likely to be Emeline (8), Grove (6) and John (less than 1 yr). • Ashley b. 1837, d. 1839.
1850-US Federal	Norman Mather (head) 45 Nancy Mather 25 Emeline (Emma) 18 Grove 16 John 10 Jane (Jennie) 7 Amelia 2 William (less than 1 yr) Abigail Goodrich 19 Cordelia Phillips 19	• Nancy is Norman's new wife—Jane died shortly after daughter Jane's birth, August 1842. • Abigail and Cordelia unknown- maybe friends of Emma?
1855-NY State	Norman W. Mather 50 Nancy C. 31 Grove W. 20 John C. 15 Jane A. (Jennie) 12 Mary (Amelia) 7 William B. 5 Franklin D. 3	
1860-US Federal	Norman W. 55 Nancy C. 35 Grove 25 John C. 20 M. Amelia 12 William B. 10 Frank D. 8 Ellen J. 3	• Jennie married Oscar Sisson in 1858 and left household.
1865-NY State	N.W. Mather 60 Cornelia N. (Nancy) 41 John C. 25 Mary A. (Amelia) 17 Willie B. (William) 15	

Table 2 (continued). United States Federal and New York State Census Records- Norman Mather Family.

Census	Household Members	Notes
1865-NY State (continued)	Frank G. 13 Ellen J. 7	
1870-US Federal	N.W. (Norman) 65 N.C. (Nancy) 46 Willie B. (William) 20 Irene 13 (Ida) May Blowen 12 R. Doty 64	• Willie is listed as working in woolen mill. • Irene unkown- probably Ellen from 1860 census. • Ida May Blowen was adopted daughter? • Doty listed as farmer.
1875-NY State	N.W. Mather 70 Nancy C. 51 Franklin D. 23 Ellen J. 18 Charles Wilder 10 Ida M. (May) Blowers 17	• Ida May Blowen is listed as a daughter and Charles Wilder is listed as a son.
1880-US Federal	N.W. Mather 75 Nancy 56 David 70 Stevenson, Josiah 20	• David is Norman's brother- listed as a farmer. • Stevenson is listed as a school teacher and boarder.

cations associated with childbirth. Norman noted on the 1865 New York State Census that he had been married three times, which means that he was married either before Jane or between the death of Jane and his final marriage. Since divorces were uncommon in those days, it is likely that Norman was widowed a second time. Norman may have lost additional children with his other wife, because he also notes on the 1865 New York State Census that he had a total of eleven children, two of whom were not found on any records and were not likely to have been his last wife's children.

After Jane's death, Norman married Nancy Cornelia Van Fossen, a young woman twenty years younger than he was. It is unclear when they married, but the first child who shows up on the census records is Mary Amelia (usually referred to as Amelia), born in 1848. Amelia was followed by William, Franklin, and Ellen Irene. Nancy would have been in her early thirties when she had her last child, which is unusual for the time, but Norman would have been in his early fifties. Norman and Nancy also adopted two children: Ida May Blowers sometime between 1865 and 1870, and Charles Wilder between 1870 and 1875.

Norman and Nancy built another house across from the mill sometime between 1852 and 1858 (Figure 1: structure 9). This time period also falls between the births of their last two children, Frank and Ellen. The 1855 New York State Census shows that six children were living with Norman and Nancy. Grove, however, may have built a house for himself close to this time period, because two houses across from the mill show up on the 1858 map. There is an H. K. Steele listed next to the Mathers on the 1858 map and is likely to be associated with the old Mather house. An 1857 deed shows that Norman and Nancy sold ¾ of an acre of land to Hilpa Steele, the wife of Hiram Steele, who is described as a wool dealer on the 1850 Federal Census. Hiram and Hilpa had a large family of eight children ranging in age from 9 to 25 living with them in 1855, and it is likely that at least five of those children moved with them to the old Mather house.

The next available map dates to 1872 and lists the mill as "N.W. Mather & Sons Woolen Manf." and the houses are listed as belonging to "N.W. Mather and Son" By this time Grove, John and William were working with their father in the mill and Grove likely lived in the house next door with his young family (Figure 1: Structure 8). Sadly, Grove's married life, like his father's, began with tragedy. Grove married Ellen Doolittle in March or April of 1861, and had a baby son named Norman D. Mather in early 1862. The

Figure 2. Atlas of Livingston County, New York, 1852. Dixon Hollow is located in the far southeast corner of the map.

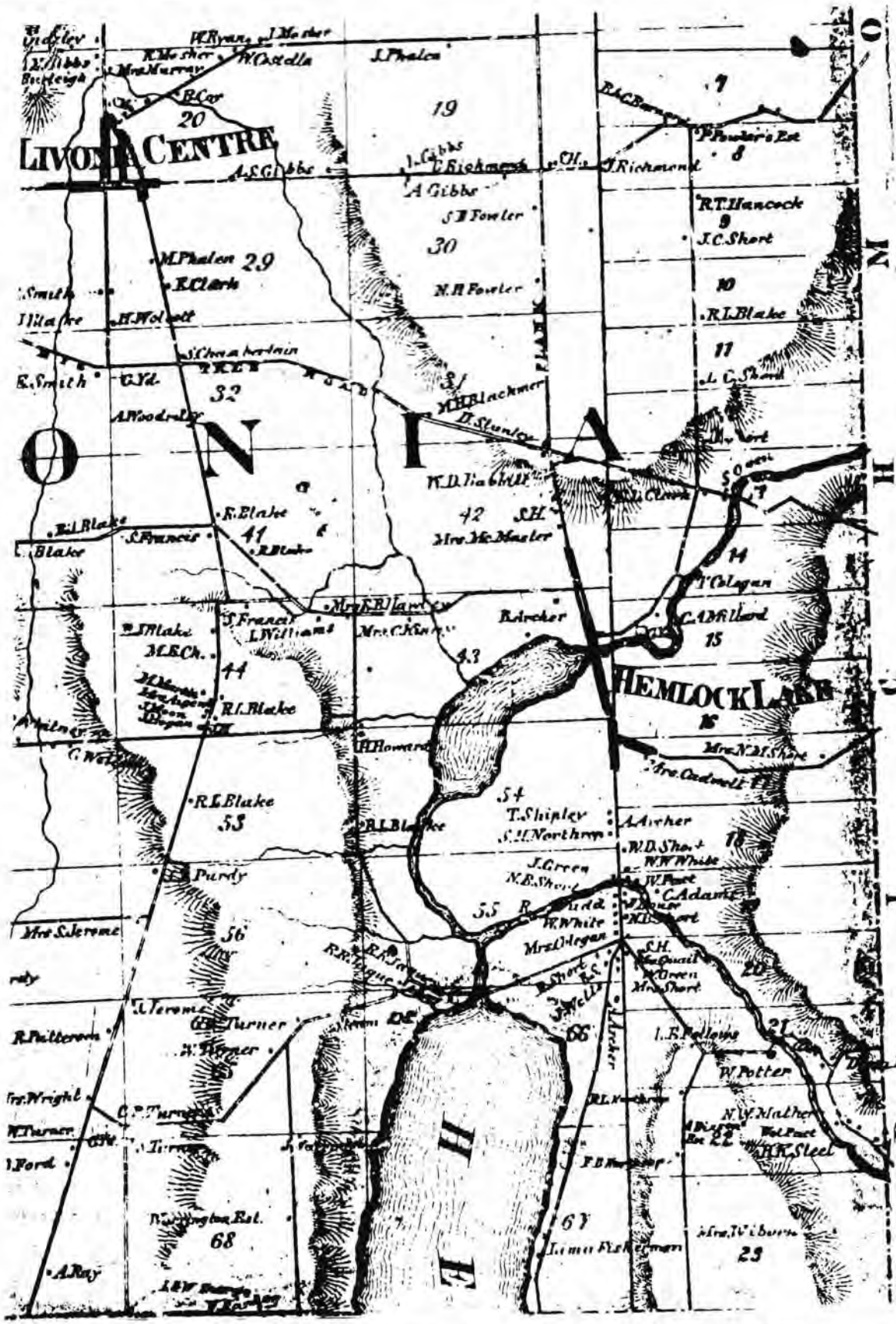

Figure 3. Gillette's Map of Livingston County, New York, 1858. Dixon Hollow is located in the far southeast corner of the map.

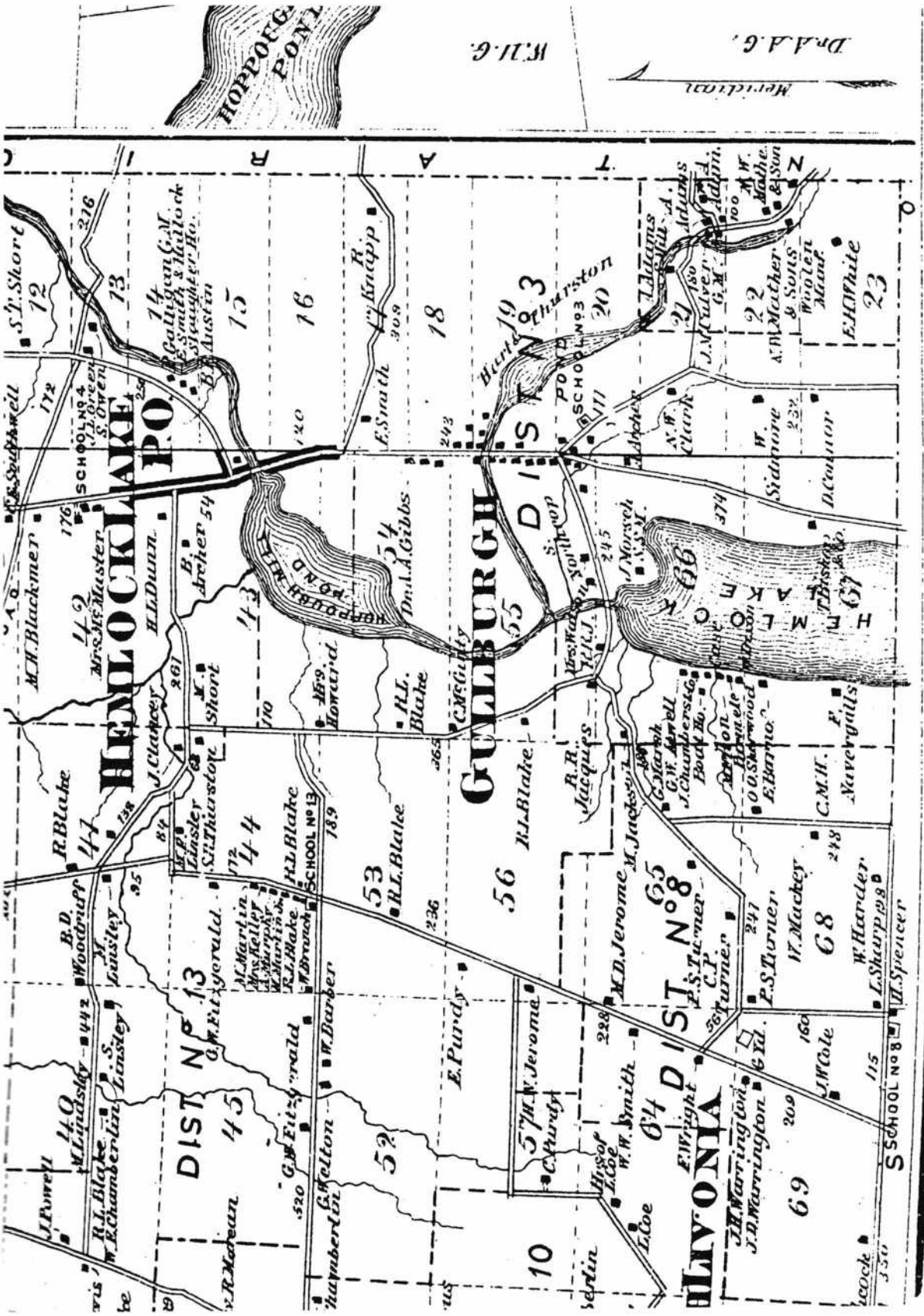

Figure 4. F. W. Beers & Co. Map of Livingston County, New York, 1872. Dixon Hollow is located in the far southeast corner of the map.

Table 3. United States Federal and New York State Census Records—Grove Mather Family.

Census	Household Members	Notes
1865-NY State	Grove Mather 31 Phila 22	
1870-US Federal	G.W. Mather (Grove) 35 Phila (Phyla) 26 Ellen 4 Ida (9 mos) A. Owen 33 Emma Ford 18	• Grove was married to Phyla's sister, Ellen, in 1861 and had a child in 1862- both died in 1862. • Grove married Phyla in 1863. • A. Owen worked in the mill. • Emma Ford is listed as a domestic servant.
1875-NY State	Grove W. Mather 40 Phyla M. 31 Ellen J. 9 Ida S. 5 Persis 1	
1880-US Federal	Grove 45 Phyla 37 Ellen 14 Ida 10 Persis 6	• Daughter Ruth born in 1875 and died in 1876.
1890-US Federal	Not available	
1900-US Federal	Grove 65 Phyla 57 Olin 15	• Olin was born in 1885. • Ida died in 1895 (26 yrs).
1910-US Federal	Grove 75 Phyla 67 Olin 25	• Olin married Gladys Richardson shortly after census (Aug 1910). • By 1920 census Grove had died and Phyla sold property and moved in with daughter.

baby lived only five weeks and then, tragically, Ellen died of diphtheria on October 20, 1862 (Mather n.d.). The next year, in November 1863, Grove got remarried to Ellen's younger sister, Phylana (Phyla) Doolittle (Table 3). Grove and Phyla had five children, beginning with Ellen Jane in 1865, and followed by Ida, Persis, Ruth, and Olin. Ruth died just before her first birthday, in 1876, and Ida died as a young woman of 26 in 1895. Olin, born in 1885, took over running the mill and farm from Grove as a young man.

Phylana Doolittle also came from a large family. Her father, Willard, was a physician and a farmer living in Richmond, Ontario County. He also lost a young wife, Emeline Bernard, sometime after the birth of their daughter, Persis, in 1831. With his second wife, Lorana Bishop, Willard had eight additional children, including Mary, Clarissa, Ellen, Willard Jr., Phylana, Asa, Truman, and Jennie. Sadly, Jennie died of dyptheria in November of 1862, just a couple of weeks after her sister Ellen succumbed to the same disease (Mather n.d.). Dr. Doolittle also lost his oldest son and namesake, Willard Jr., to dyptheria when Willard Jr. was forty years old (Mather 1939). Willard Doolittle Sr. was remembered in a 1920s' era newspaper article as one of the few doctors available to the residents of Hemlock Lake (Livonia Gazette n.d.). Apparently, Hemlock Lake did not have a doctor, so the residents went to two doctors in Livonia Center and to Dr. Doolittle, "over on the

Richmond hills;" these doctors "were called to help our people into and out of the world through heroic practice" (Livonia Gazette n.d.). Like the Mathers, the Doolittles came from Connecticut. Willard's father, Asa, died when Willard was young but spent the last seven years of his life in Richmond, Ontario County. Willard died in 1875 after being thrown from his buggy while on route home from seeing a patient. He is remembered in his obituary as "an old and highly respected physician of the town of Richmond" (Ontario County Journal 1875).

John Mather, Norman's second oldest son, is listed on the 1870 Federal Census with his wife, Jerusha Green, and their one month-old baby, Mary. It is unclear, however, exactly where John and his wife lived. They appear on the census in close proximity to the other families listed on the map as residing in Dixon Hollow, and deed records show that he owned property in Dixon Hollow. It is possible that they were living in the old Mather house, since that structure does not have a specific name associated with it (by 1872, the Steele family seems to no longer live in Dixon Hollow). In 1872 John and Jerusha sold three tracts of land in Dixon Hollow, totaling about 24 acres in area, back to Norman and Grove. In 1875, John sold a small transect of land to the City of Rochester for laying an iron pipeline, including the area for the conduit itself and 35 ft of land on each side. It is likely that this tract of land was in the center of Hemlock proper and that this was where he and Jerusha lived and farmed after 1872.

Norman and Grove are listed right next to each other on the 1880 Federal census which lists the occupations of both men as pail manufacturers. Sometime between 1870 and 1880 there seems to have been a shift from wool to pails in the focus of the products manufactured at the Mather mill. In fact, the 1875 New York State Census listed Norman and Grove as "butter tub manufacturers." Interestingly, an advertisement in The Livonia Gazette from Friday, April 9, 1886, notes that "his (G.W. Mather) white oak tubs are considered to be the best for preserving butter." Norman and Nancy sold what appears to be most of their Dixon Hollow land, 26 acres in total, to Phyla, in July of 1878; interestingly, Grove was not involved in this transaction as his name does not appear on the deed. Phyla paid Norman and Nancy $5,000, of which $2,000 was mortgaged (Livingston County Clerk, Grantors and Grantees Deeds 1878) . At this time, Norman's brother, David, listed as a farmer, was living with Norman and Nancy. Both Norman and David were in their 70s at that time. John is also found on the 1880 Federal census, living with Jerusha, their two children, Mary and Eudora, and Jerusha's parents, Joseph and Lydia Green, though likely in the center of Hemlock proper.

Norman W. Mather died on December 31, 1884, at the age of eighty years. An obituary refers to him as "Col. N. W. Mather" and "one of the best known residents of Livonia" (Livonia Gazette 1885). After mentioning that he had been sick for a few weeks and informing about funeral arrangements, the obituary goes on to say that "the deceased was one of the most highly respected citizens of the community and his death is a positive lost to it." Nancy died in 1895, and it is likely that she continued to live in the house, adjacent to that of Grove and Phyla, until her death. It is unclear who was living in the house after Nancy's death.

By 1900, Grove and Phyla were living with only their youngest child, Olin, who was then 15 years old. Interestingly, the mill was either not in operation at this time, or was rented out to someone else, because Grove's occupation is now listed as a farmer. Olin was still too young to take over running the mill and was, at this time, at school. On the 1910 Federal census, Grove's occupation is listed as "own income," which infers that he was living on savings. Olin's occupation, at 25 years old, is also listed as a farmer, so the Mathers appear to have not been running the mill at this time either. Grove died in 1915 at the age of 81 years. He was the longest resident of Dixon Hollow, having lived there his entire life. Phyla outlived Grove by thirteen years and had to deal with negotiating the sale to the city on her own. Phyla was the last resident of Dixon Hollow to sell her land to the city. She did this in June 1918, for the sum of $8,000 which reportedly made her the wealthiest woman in Hemlock. According to the original deed, Phyla was permitted to continue living in the house until the first of January of the following year and during that time was also permitted to move the mill and any contents "provided it's moved to a point not less than one mile from Canadice Outlet" (Livingston County Clerk, Grantors and Grantees Deeds 1918, 201:239). Sadly, it is also reported through family stories that the bank where Phyla deposited her money folded the very next day. Phyla lost all of her money and supposedly had an emotional breakdown, requiring her to move to Minnesota to live with family.

Olin married Gladys Richardson in August of 1910 after a courtship that took him, each day, up Dixon Hollow Road and over the hill toward Honeoye. Olin and Gladys lived in the house that had likely belonged to his grandparents, Norman and Nancy. They lived there less than ten years before Phyla sold the mill, house and property to the city. They did have their young girls, Olive and Beryl and their son, Grove, while still in the house (Table 4). The mill was taken apart and hauled by horse and cart down to the town of Hemlock. Olin and Gladys moved their family to Hemlock where Olin continued to manufacture cider in the original mill and the couple had another son, George. The mill is still standing today in Hemlock (Figure 6). It is

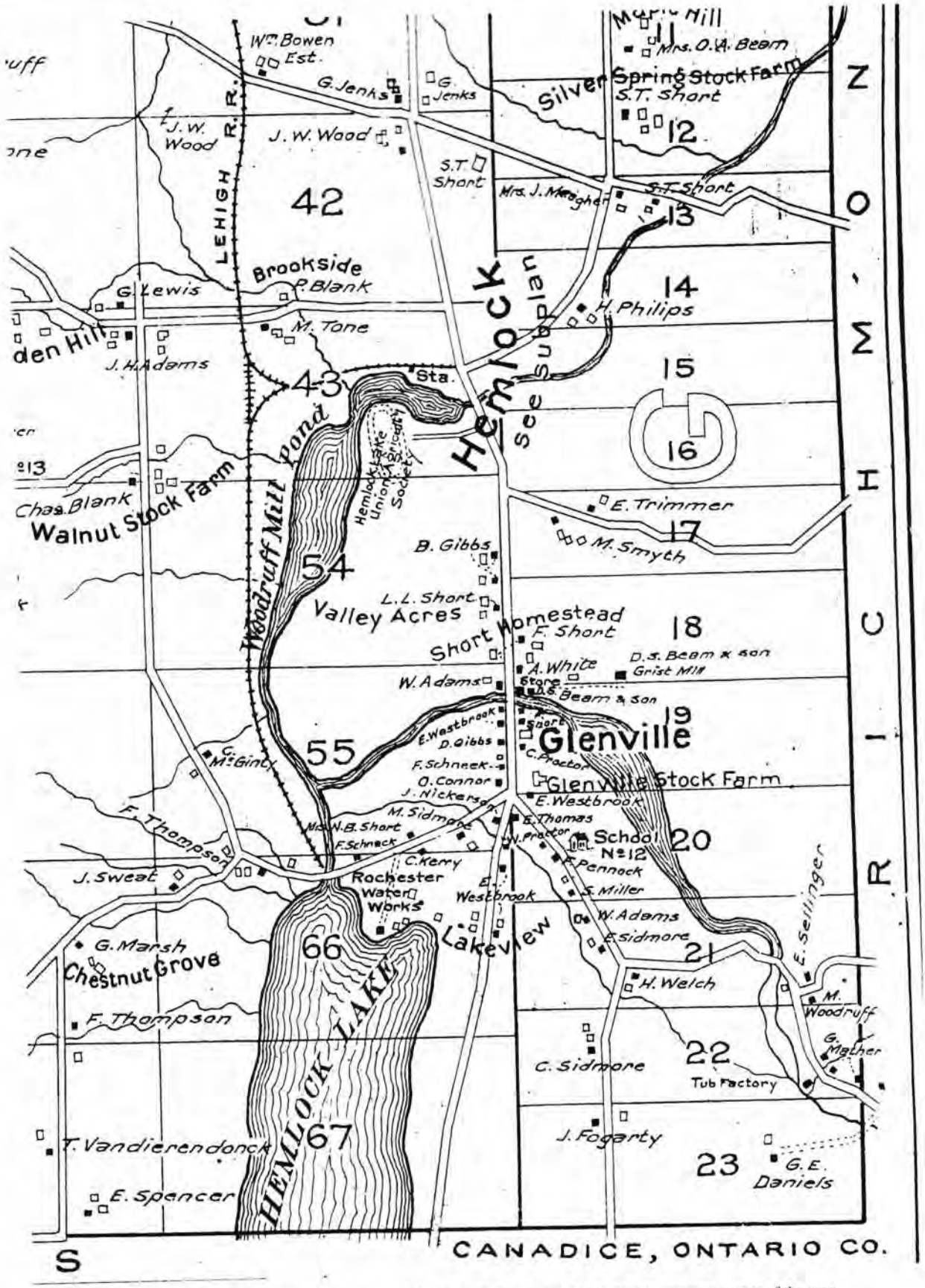

Figure 5. New Century Atlas of Livingston County, New York, 1902. Dixon Hollow is located in the far southeast corner of the map.

Table 4. United States Federal Census Records—Olin Mather Family.

Census	Household Members	Notes
1920-US Federal	Olin 34 Gladys 36 Olive 6 Beryl 5 Grove 1 yr 11 mos George 6 mos George Richardson 66	• This census was probably taken after Olin moved his family out of Dixon Hollow. • George Richardson is Gladys' father

Figure 6. Former Mather Mill, now apartment complex, standing on Clay Street in Hemlock.

located on Clay Street, where it has functioned for the past thirty years as an apartment complex

The Dixson Family

Amos Dixson was one of the first residents of Dixon Hollow and is part of the family for whom the hamlet is named. His name is associated with a structure on the 1852 map, probably his residence, along with a gristmill (Figure 1: structure 2) located just north of the house, along the outlet. It was apparent after spending much time trying to track down the "A. Dixon" listed on the map, that the Dixsons actually spelled their name with an "s," thereby rendering the colloquial name for the hamlet, Dixon Hollow, a misspelling. One account names Henry Dixson as the founder (Waite 1883), while another account names Ezra Dixson (Canadice Chronicle 1993). Henry, and probably Ezra as well, were brothers of Amos.

Amos was born in Connecticut into a family of ten children. His father moved to a farm in Utica, New York, probably in the late eighteenth century. At least five of these brothers, including Amos, John, Robert, Henry, and Ezra, moved to Richmond, New York as young men to pursue milling and mercantile trade. Amos' brother, John, is described in a lengthy obituary in the Ontario County Times as "one of the pioneers of this county" who was:

> engaged in the manufacture of potash...and purchased in New York a stock of dry goods and groceries, going thence as far as Albany on horseback, and bringing his goods from that city by teams, until the completion of the Erie Canal in 1821 furnished a more expeditious means of conveyance [Ontario County Times, April 9, 1879].

By 1837 John owned three mills and had an interest in eight or ten different stores. One of these stores may have been the one located in Dixon Hollow, as discussed later.

Amos Dixson is first found in the 1830 Federal Census, listed next to N.W. Mather (Table 5). Unfortunately, the early Federal Censuses, up to 1840, did not list individuals residing in the households other than the head of household. Consequently, the identities of the other occupants, three males and two females, are unknown. On the 1850 Federal Census, Amos, now 67 years old, is listed as a miller. Roxana Griffin, a woman 11 years younger than Amos, was living in his household at this time and by 1855 they were living in the house alone. On the 1855 New York State Census, Roxana's relationship to Amos is, unfortunately, difficult to read but she describes herself as a widow. It is possible that she was a domestic servant, but Amos bequeathed the household furniture and bedding to her in his will, which seems unusual if she were a servant. It is possible that Roxana is the woman listed with Amos on earlier censuses, but they do not appear to have been married. It seems that Amos did not have any children living at the time of his death because he only listed his nieces and nephews as heirs in his will (in addition to Roxana). He also left the boxes noting whether an individual was married or widowed blank on the 1855 New York State Census and is buried alone in Union Cemetery, Livonia. The ages of the

Table 5. United States Federal and New York State Census Records- Amos Dixson Family

Census	Household Members	Notes
1830-US Federal	Amos Dixson (head) 1 female 30-40 1 female 10-15 3 males 20-30 1 male 40-50	• The 40-50 yr old male is probably Amos. • The younger males could be his brothers.
1840-US Federal	Amos Dixson (head) 2 males 20-30 1 male 50-60 1 female 20-30 1 female 30-40	• The older female in both the 1830 and 1840 censuses could be Roxana Griffin. • The younger males could be Cyrus and Robert.
1850-US Federal	Cyrus Dixson 29 Emily 25 Robert 31 Amos 67 Roxana Gifford (Griffin) 50	• Cyrus and Robert are nephews. • Unclear regarding Roxana's relationship to Amos. • Roxana's age is incorrect- she was born in 1794 (she was 56).
1855-NY State	Amos Dixson 72 Roxana Griffin 61	• Roxana's name and age are different compared to previous census- she is listed as a widow and a housekeeper for occupation.

other individuals listed on the 1830 and 1840 census indicate that they could be children but, again, it is unclear whether Amos was even married. Roxana is buried in the cemetery in Hemlock with William and Elizabeth Potter (living in Dixon Hollow on the 1858 map). Elizabeth referred to Roxana as her mother in her will (she left her mother Roxana's jewelry to her daughter and also asked that a gravestone be erected for her mother) (Livingston County Surrogate Court, Wills and Probate Records 1880, x2136). Although her relationship to Amos is unclear, Roxana Griffin connects the Potter family with Amos Dixson.

Also on the 1850 Federal census, two sons of Amos' brother, John, reside with Amos. Cyrus Adams, 29 years old, is listed as head of household and a miller by occupation, while Robert, 31 years of age, is listed as a merchant. It is likely that Amos and Cyrus ran the gristmill, located near the house. It is interesting that Robert is listed as a merchant because historical accounts of the area, including the recollections of Olin Mather's daughter, Beryl, say that there was a store in Dixon Hollow in the area near the house listed on Gillette's 1858 map as A. Dixon. In fact, on an 1896 deed, the premises were described using "the old stone building formerly known as the Dixson Store" as a landmark. The fact that Robert is listed as a merchant suggests that the store was likely in operation in 1850. It is likely that the larger house near the mill, the Dixson family house (Figure 1: structure 5), was built to accommodate these nephews and their families and may have also housed the store. Both nephews left Dixon Hollow by 1855.

Amos Dixson died in 1858 at the age of 75 years. A later deed dated to 1928 referred to "the residence in which his (Amos') death occurred," which is the smaller house at the intersection of Dixon Hollow Road and the old east-west road (Figure 1: structure 7). It is likely that this is the first house that Amos built and the one that he lived in during his time in Dixon Hollow. Norman Mather was listed as one of the appraisers for Amos' estate, which provided additional evidence that Amos Dixson is the "A. Dixson" listed on the 1852 map. In May of 1860, Robert and Henry Dixson, administrators of his estate, filed a petition to sell all of the land in Dixon Hollow which was owned by Amos in order to pay an outstanding debt of $2,870 from his estate. The total land area owned by Amos was 75 acres, comprising the entire eastern portion of lot #21, from the Fellows land on the west to the county line on the east (see 1858 map). By the time the 1872 map was drawn, the Dixsons were completely gone from Dixon Hollow. Cyrus and his wife, Emily, were found on the 1870 Federal Census, living in

Table 6. United States Federal and New York State Census Records—Albert Adams Family.

Census	Household Members	Notes
1865	Albert Adams 36 Cynthia 32 Selinda Quail (Quayle) 72 George McCrossen 32 Jane McCrossen 28 Franklin McCrossen 12	• Selinda is Cynthia's widowed mother- she and Cynthia lived close to DH in 1840 (Cynthia's maiden name is Payne). • 6 yr old son, Eugene, died in 1863. • George is a soldier—his wife and child may have boarded there during the war.
1870-US Federal	Albert Adams 41 Cynthia 36 Albert (I.) 5	
1875-NY State	Cynthia W. Adams 41 Bertie (Albert I.) Adams 10 Eliza A. Belia 48	• Albert senior died in 1872. • Eliza is also a widow, but relationship to Cynthia is unclear.

Table 7. United States Federal and New York State Census Records—Azel Adams Family.

Census	Household Members
1865-NY State	Azel B. 34 Sarah E. 28 Wilbur 9
1870-US Federal	Azel Adams 39 Sarah 34 Wilber 14 JW 5 Frances 2

Canandaigua. They probably moved there to be close to Cyrus' sister, Mary Jewitt, and his father, John. Both Henry and Robert Dixson lived to be very old men and were fondly remembered by residents of Hemlock and Livonia.

The Adams Family

The Adams name, noted as "A. Adams," first appears in Dixon Hollow on the 1872 map. The "A. Adams" refers to Albert Adams, who owned a considerable amount of property both on the west and east sides of the outlet. In May of 1860, Albert Adams purchased the 75 acres of land, comprising the eastern half of lot number 21 that had belonged to Amos Dixson. The proceeds derived from this transaction, as mentioned earlier, were intended to settle the debts still owed by the estate of Amos Dixson. On the 1872 map there were at least three houses owned by Albert Adams, including the Dixson family house and Amos Dixson's house (where Amos Dixson lived and died), located at the intersection of Dixon Hollow Road and the road that ran west-east up a steep incline to what is today Canadice Lake Road. Up the hill from these houses and along the west-east road, was a homestead that included a house (Figure 1: structure 6) and a barn. Also on the 1872 map were two mills, including the grist mill formerly owned by Amos Dixson, and a sawmill (Figure 1: structure 1) located on the west side of the outlet. Albert Adams likely built and ran the sawmill. On the 1870 census, Albert's brother, Azel Adams, also lived in Dixon Hollow, although there is no evidence that he owned property there. Albert and Azel's father, Willis, lived in Amos Dixson's house and also occupied a barn and garden area just southeast of the bridge. Albert is listed as a carpenter and not a mill owner or manufacturer; however, it is clear from the probate records associated with his estate (and since the mill was a sawmill) that Albert Adams ran the mill and likely built it. Both Azel and Willis Adams are listed as farmers, so it is possible that they helped to farm the property northeast of the outlet. Interestingly, the grist mill and a nine-acre lot surrounding it, including the bigger Dixson family house and (possibly) store, were sold to various individuals during the time that the Adams' owned the larger parcel of land described above.

Albert and Azel Adams show up on the 1850 Federal Census with their parents, Willis and Emily, and their four siblings, Lucretia, John, Isaac, and Willis. They were the two oldest sons of the family, living in Canadice, a small community southeast of Dixon Hollow. Albert Adams was 41 years old when the 1870 census was taken. He had a wife, Cynthia, and a young son, Albert (Table 6). Albert and Cynthia's other son, Eugene, died in 1863 at the age of six years. It was puzzling that both Albert and Azel disappear

Figure 7. Berry picking in the hollow sometime around 1913, shortly before Grove's death. Grove Mather is standing in the back left; Olin Mather, Beryl's father, is standing in the back right holding Olive Mather. Photo courtesy of the late Beryl Mather.

from the census records by 1880, until cemetery records show that Albert died in 1872. Azel, 39 years old, was living with his wife, Sarah, and three children when the 1870 census was taken. However, they are also missing from the 1880 Federal Census (Table 7). It is unclear what happened to Azel and his family, although deed records show that Azel later bought land in the town of Springwater, near the southern end of Hemlock Lake. Albert willed "the house, garden and barn" described above to his father, Willis.

Albert died a young man of 43 years of age, leaving behind his young wife and four year old son, Albert I. (the middle initial likely stands for "Isaac," Albert's brother). Thankfully, extensive probate records (Livingston County Surrogate Court, Wills and Probate Records, 1858-1908, Albert Adams) detail the sale of items associated with the mill and his personal estate, transactions for the rental of the sawmill, and more personal matters regarding the guardianship of young Albert. These probate records indicate that the sawmill was rented out for several years following Albert's death, including to N. W. Mather & Son for an undisclosed period of time at a cost of $40.77. The farmland was also rented to various individuals during those years, all of which resulted in income for his estate. Both Cynthia and young Albert were listed as beneficiaries in his will, each receiving one-half of his estate after other debts and obligations were met. Between 1875 and 1879, Cynthia received an annual income of about $216. She also received $104 per year for the boarding and care of Albert as well as additional funds for his clothing and shoes.

Especially interesting in the probate records of Albert Adams' estate is a petition that was filed by Cynthia in 1879 to the Surrogate Court of Livingston County. In the petition, Cynthia appealed to the court to overturn guardianship of young Albert from Charles Coykendall, who Albert senior appointed as guardian of Albert and his interest in his father's estate. Cynthia seems to be especially distressed, because Coykendall, apparently against her wishes, decided to put young Albert into service with a local family. Cynthia maintains that her son is, in fact, "a boy of delicate health and constitution, subject to periods of illness and unable to endure severe manual labor" and that "there is no necessity of his being put to such labor; that his best interests demand that he should have an opportunity of attending school and receiving a good education." Cynthia goes on to assert that she is wary of the way in which Coykendall has overseen estate funds and that he "is in the habit of using vulgar and profane language and that he has frequently used such language in the presence of the said boy." Coykendall answered this petition, maintaining that he was only doing what Cynthia had asked of him, which was to "take said Adams from her possession and custody or put him in custody of some other person who could control and govern him claiming that she was unable to do so" especially "if he could get said Adams cared for and provided for at a less sum than he is paying petitioner." Coykendall goes on to deny that he is an "impulsive and passionate man" who "when angry...is in the habit of using vulgar and profane language." In fact, Coykendall maintains that the situation that he found for Albert, to be taken into a local family, would allow him to apprentice in "the art of farming."

Cynthia and her son Albert sold their land to Isaacher Salinger, who later sold the land to his wife, Lucy Salinger. According to census and deed records, Albert eventually moved to Seattle, Washington, administering the sale of the land from that location. It is clear that Albert was able to get the education for which his mother petitioned, because he opened a practice as a land attorney in 1900. In 1893, he married a woman from Missouri named Lily, and had a son in 1896. Sadly, Albert died in 1906 at the age of 40, a young man like his father. Never remarrying, Cynthia died in 1908 at the age of 74 years. In her will, she left her entire estate to her niece, having outlived both her husband and son.

Ethnohistory and Family Archives

Much more information is known about the Mather family, as compared to the other families who lived in Dixon Hollow. This is owed in great part to the interest of Beryl Mather, the younger of two daughters of Olin and Gladys Mather (Figures 7-8), who remembered moving from Dixon Hollow as a five-year old child. Beryl offered insight and memories regarding the life of her family in Dixon Hollow through participation in an ethnohistorical documentary project. She also hiked down to the site on several occasions

Figure 8. Olin Mather playing with Olive. Beryl is in the buggy in the background. Grove Mather's house is in the background and to the left. Photo courtesy of the late Beryl Mather.

so that she could speak more pointedly regarding her memories of living in Dixon Hollow (not an easy task for a woman in her late eighties). Beryl recalled the location of the stable, berry patch, and store. She also spoke about her parents' interest in music; her father played the coronet and her mother was an accomplished pianist and composer. Beryl recalled how, on summer evenings, music could be heard down the hollow. The picture of the Mather family that emerged from her interview was that of a cultured family. Beryl recalled that the picture of her dad, Olin, sister, Olive, and herself, was taken with a disposable Kodak camera shortly before moving away from Dixon Hollow.

Also important to preserving the history of the Mather family is a collection of letters written to Grove and Phyla Mather from several family members and friends. This collection was donated to the Rare Books, Special Collection, and Preservation Department at the Rush Rhees Library, University of Rochester, and is comprised of twenty-two letters dating between 1863 and 1879 (see Mather Family Papers). Most of the authors have been identified as family members, especially sisters of both Grove and Phyla. Many of these letters were written to Grove and Phyla during the Civil War and offer important personal accounts of the history of the war.

One of the central themes in the Civil War era letters is the hardship that the wives of soldiers were forced to endure. Phyla's sister, Mary, was married to a man named George Morgan and was living in Rockton, Illinois during the war. While her husband was away fighting, Mary was left alone with her four children. During a period around 1864, Grove and Phyla were taking care of her older children, Frank, Willard, and Clara, ages 7, 5, and 3, respectively. Although the circumstances under which Phyla and Grove took custody of Mary's children are unknown, the separation clearly caused Mary sadness:

> I miss my little ones that are there but that is no more than I expected, I sometimes wake when the nights are cold & wonder if they are kept covered, still I think they will have all the care they require, I do not have the fear and anxiety about them that I do about George...I know my little ones are just as safe there as if with me, still it would be a privilege to take care of them if I could have them with me & it sometimes seems hard to burden our friends with them when it would be such a privilege to do it [Mather Family Papers, Letter from Mary Morgan to Grove and Phyla Mather, April 7, 1864, p. 2].

Mary mentions that she is teaching, so that may be the reason why she left her children with Grove and Phyla. She kept her youngest son, Grove, who would have been about 14 months old at the time of the letter. She mentions that:

> Little Grove grows fast. I have weaned him & think he is less trouble than he was before He has had gatherings in his ears, & a some mouth since we have him here [Mather Family Papers, Letter from Mary Morgan to Grove and Phyla Mather, April 7, 1864, p. 3].

Mary included her letter to Grove and Phyla in an envelope with another letter to a sibling "to make the most of postage." Although the recipient of the other letter is unknown because the first page is missing, Mary ends the letter by saying, "Now don't forget to write to your lonely sister." Misspellings and other errors are in the original letter. Mary also writes about the difficulty of having her husband off at war:

> I seldom attempt to describe what is in my heart for there is a weight there which I can not be expressed or can not be understood by the inexperienced [Mather Family Papers, Letter from Mary Morgan to Grove and Phyla Mather, April 7, 1864, p. 2].

She is concerned that George may not be granted a furlough, even though he is due for one soon,

> Phyla I expect Geo will come on a furlough to before long, notwithstanding borrowed trouble & I shall be glad to see him you must know, there has been some of his reg. here ever since I came back, they have not granted furlough's to them that were well until quite lately...[Mather Family Papers, Letter from Mary Morgan to Grove and Phyla Mather, April 7, 1864, p. 4].

Mary notes that a Sargeant Cole, who served with her husband, told her about the requirements placed on men when they enlisted in the army,

> ...he said they were entitled to 4 months furlough during the 3 years & if they did not have it would be discharged so much sooner or be paid for the time, said they had made up their minds they would have to serve 3 years out, if the fighting should be finished sooner there would be need of a standing army there for some time [Mather Family Papers, Letter from Mary Morgan to Grove and Phyla Mather, April 7, 1864, p. 5].

An interesting aspect to this correspondence is the sentiment felt by her husband's friend that the war would end quickly, a common assumption among those from both the north and south in the early days of the war.

Another interesting set of letters that portrays the difficulties that soldiers' wives endured comes from those written to Phyla from her sister-in-law, Emma. Emma, whose full name was Emeline, was Grove's sister and married to William Congdon of Bergen, Genesee County. Emma and Will (as he calls himself) were married in December 1863, and had a young son, Henry. Emma writes Grove and Phyla while she is at her husband's family farm in Bergen as well as from Chattanooga, Tennessee, where her husband was stationed at the end of the war. Emma was clearly unhappy while home alone without Will, but also endured much physical hardship while staying with him at the Quarter Masters Department in Chattanooga. Will writes, "Emma has been quite ill since she came down here. I am persuaded that this climate is not suited to her constitution" [Mather Family Papers, Letter from William Congdon to Grove Mather, November 3, 1865, p 1]. He also describes their living conditions as somewhat impoverished with "bare floors, small allowance of dishes...no change of plates for pie, when we have pie..." (Mather Family Papers, Letter from William Congdon to Grove Mather, November 3, 1865, p 2).

In addition to personal accounts of his experiences while on active duty, Will also describes the conditions around him. These accounts tell much regarding both the historical events of the time as well as the sentiments of Will as a person. Will mentioned that many of the transport and gunboats were for sale and that:

> There remains nothing but colored troops and I understand there are some to be withdrawn so by degrees things are assuming a peaceful appearance again but these darkies I don't know what is to become of the poor creatures when governmental work is stopped. You and all of us will hear of much suffering among them [Mather Family Papers, Letter from William Congdon to Grove Mather, November 3, 1865, p. 3].

Obviously, the language itself would be inexcusable today, but the concern that post-slavery and post-war life for African Americans was going to be extremely difficult says much about Will's character. In an earlier letter written from Atlanta, Will, who is clearly homesick, writes,

> I miss the loved ones at Home and I fear that should I conclude to remain here it may be some time ere I see them again. Genl. Sherman has issued a strict order prohibiting citizens or females coming to this place [Mather Family Papers, Letter from William Congdon to Grove Mather, September 17, 1864, p. 2].

Another important theme that runs through the letters is the importance of family and home. Much of this sentiment comes from Will, who wrote many of the letters. In several letters, he refers to Dixon Hollow and, specifically, the homes of Grove and Norman as "Home Vale." In one such letter, he writes to Grove, "Give much love to Phyla & all at Home Vale & upon the Canadice Mountain" (Mather Family Papers, Letter from William Congdon to Grove Mather, September 17, 1864, p. 3). In another letter, clearly distraught at not having received letters, he writes to Emma's brother, John, "Seems as though I was almost forgotten and am sure I know but little how 'folks in the Hollow' are prospering except as I hear from home" (Mather Family Papers, Letter from William Congdon to John Mather, October 11, 1863, p. 2). Emma asks Phyla to give her "love to all in the valley" (Mather Family Papers, Letter from Emma Congdon to Phyla Mather, May 4, 1865, p. 1). There are also affectionate references to Norman and Nancy, where letters are to be passed to "the next house" along with "a great deal of love." Phyla's sister, Mary, asked to give her love to "Father M's family." Will also inquires after the work being done at the factory, asking in an 1863 letter if they are working in the factory that winter and how their "business was affected by the high price of cotton goods" (Mather Family Papers, Letter from William Congdon to John Mather, October 11, 1863, p. 2). Will writes to Nancy Mather, "Judging from the quantity of material that you have on hand, the work up in the Factory I conclude that no idle hands will be for sometime found in the valley" (Mather Family Papers, Letter from William Congdon to Nancy Mather, July 16, 1865, p. 3)

Archaeological Excavations in Dixon Hollow

The goals of the archaeological excavations at Dixon Hollow were to determine the approximate construction periods associated with the structures and to gain an understanding of the socioeconomic status of the individuals who lived there. The Dixon Hollow project area runs along the outlet, on both the west and east sides of the old steel bridge, from Old Bald Hill Road to Canadice Lake Road. This area consists of at least six house foundations and three mill foundations. Archaeological excavations were conducted by St. John Fisher College (2003-2008, 2010) and SUNY College at Geneseo (2004 and 2009) field school students

under the direction of the author (2003-2010) and Dr. Paul J. Pacheco (2004). Of these structures, the six house foundations, called Amos Dixson House, Dixson Family House, Mather Area (including Grove Mather and Norman Mather's houses), Old Mather House, and Adams House were the primary focus of the excavations. Excavation was also conducted around the foundation of Adams' Mill. Table 8 also shows the occupants of the houses that were excavated in Dixon Hollow. It is important to note that multiple families and multiple generations of the same family lived in many of the structures.

Adams' Mill Area

Excavation of Albert Adams' sawmill was conducted in the summer of 2003. What is left of the sawmill are foundation stones on either side of a small mill run located on the south side of the outlet and northwest of the bridge (Figure 9). An attempt was made to locate a possible residence associated with the mill, although such a residence was not apparent from the results of a reconnaissance survey done prior to excavation.

Table 8. Occupants of houses at Dixon Hollow.

Old Mather House	Norman W. Mather
	Hiram K. Steel
	John C. Mather
Dixson Family House	Amos Dixson
	M.D.F. and Elizabeth Hoppaugh
	William N. Smith
	McClave Family
	Edward Salinger
	Lloyd Salinger and Family
Amos Dixson House	Amos Dixson
	Willis Adams
	Lucretia Rouse
	Mary Woodruff
	Grace and John Welch
Olin Mather House	Norman W. Mather
	Olin Mather
Grove Mather House	Grove and Phyla Mather
Adams House	Albert and Cynthia Adams
	Azel Adams?
	Lucy Salinger

The goal of this excavation was to ascertain the dimensions of the mill and to locate the residence associated with the mill. In order to determine the dimensions of the mill, three 1 m by 1 m test units were placed in the area just above the south end of the foundation and run (Figure 10). These test units were excavated until a shale bedrock layer was uncovered, averaging about 30 cm in depth. These units were sterile of cultural features and artifacts. Two additional test units were placed on the outlet side of the foundation and mill run on what is a small island (lying between outlet and run). The only artifact found was a large structural bolt and no cultural features were found. A handful of sherds and brick fragments were found at the end of the run, along the water's edge.

A shovel test survey was also conducted in the area between the mill and the road in order to locate additional structures like the Adams' residence. A total of 20 shovel tests, 50 cm in diameter by 50 cm deep were placed up the slope at 50 ft intervals throughout the survey area from the foundation, on the flatter terrace above the foundation, and adjacent to the road (Figure 11). All shovel test units were sterile of cultural features and artifacts.

A small foundation was discovered just up the road from the shovel test area (to the west), which is not shown on any of the early maps. It is possible that this foundation is associated with the mill. Neither structure is shown on the 1902 map and is noted only as "former mill" on the 1910 map. Due to time constraints, excavation of the house foundation was not conducted. This is, however, an interesting area that deserves further exploration.

Dixson Family House Area

The structure that gets its name from the Dixson family is located just northeast of the junction of Dixon Hollow Road and the old road that ran east from Dixon Hollow Road on the east side of the outlet. This house was likely inhabited by Amos Dixson's nephews, and may also have been used as a store (see the historical section above). The house and a nine-acre lot which included both the grist mill and the water rights went through a series of owners between 1860 and 1911. Albert and Cynthia Adams co-owned the property with M. D. F. and Elizabeth Hoppaugh until 1868, when they sold the property to William N. Smith. Even though deed records show a succession of owners during that time, the only family that appears in the Federal Census records is that of Michael H. McClave, his wife, Eliza, and their five children in 1880. This large family, which included daughters Pheobe, Alida, Isadora, and Carrie and son, Charles, owned the grist mill and surrounding property from 1873 to1888.

The foundation of the house consists of a basement lined with large boulders and is approximately 41 by 26 ft in

size (Figure 12). It is important to note that the actual size of the basement foundation may not represent the true size of the house itself, since additions were often added without extending the basement. Orientation of the house was achieved by lining the view of the foundation along an anonymous photograph of the house taken in 1912 (Figure 13). One by one meter test units were placed both within and outside the house foundation according to the presence of features and artifacts scattered on the surface. A unit located near chimney remains held a large number of artifacts, as did a unit alongside the remnants of a retaining wall near the front steps to the house. Two associated foundations are located near the house; the closest foundation, which is about 33 by 14 ft in size, is located across the road and toward the outlet from the house (Figure 1: structure 3). The other foundation is located to the north of the house (Figure 14) and may have been the location of the barn that Albert Adams willed to his father, Willis. The functions of these structures, however, remain unknown.

Amos Dixson House Area

The Amos Dixson house foundation (Figure 15) is located just south of the Dixson family house. This house, which was likely built by Amos Dixson, is clearly marked first on the 1872 map (although it appears to be shown also on the 1858 map) and is likely the house where Amos Dixson died (as mentioned earlier). At the time that the 1872 map was drawn, the entire portion of the lot was owned by Albert Adams, and Albert's father, Willis, lived in the house. Albert Adams willed the house to his father and then Willis sold the property back to Cynthia for one dollar in 1880. Cynthia then sold the property to Lucretia Rouse in 1891 who then sold the property to Mary Woodruff by 1902. Mary, who is associated with the house on the 1902 map, sold the property to Edward Welch in 1906. By 1910, Grace Welch, Edward's daughter-in-law, owned the land on the entire west side of the outlet and lived in the house with her husband, John. She

Figure 9. View of Adams' Mill foundation, view looking north and toward the outlet.

Figure 10. Test unit on slope just above and south of the Adams' Mill foundation.

Figure 11. Looking up the slope from the Adams' Mill foundation showing placement of shovel tests.

Figure 12. Dixson House foundation, c. 2004, looking toward north side of house after clearing.

sold her land and, presumably, the house, to the City of Rochester in 1911.

The house foundation is small, approximately 20 by 13 ft in size, and includes a basement lined with boulders (again, the original house may have been larger). One by one meter test units were also placed within and around the foundation during the 2004 and 2010 field seasons.

Figure 13. Dixson House, c. 1912. Photo courtesy of the late Beryl Mather.

Mather Area

The foundations representing the Mather residences (those belonging to Grove and Norman and, later, Olin Mather) and the Mather Mill are located about a quarter mile southeast of the Dixson foundations, also along Dixon Hollow Road (Figures 16 and 17) where a small creek flows into the outlet. Initial clearing of extremely thick vegetation revealed a house foundation (without stones) and well on the south side of the creek which ran through the Mather property, between the houses. The map showed that Grove and Phyla's house was located across the creek from Norman's house, but no foundation was visible. In order to determine the original size and orientation of the house, 1 by 1 m units and a 10 by 1 m trench were placed inside the Olin Mather foundation (see Figure 18), and 1 by 1 m units were also placed just outside the foundation.

To determine whether Grove's house actually stood in the area opposite Norman's house, 1 by 1 m test units were placed in systematic intervals with the hope that one of these would show evidence of a structure. Upon excavation, a stone wall, which represented the original house foundation, was visible. The foundation wall representing the front of

Figure 14. View looking south along the remnants of a possible barn foundation. Dixson House is located to the south.

Figure 15. Amos Dixson House foundation, view looking north.

Figure 16. View of Grove Mather House c. 1912 from Dixon Hollow Road, view looking east. Photo courtesy of the late Beryl Mather.

Figure 17. View of Norman/Olin Mather House c. 1912 from Dixon Hollow Road, view looking east. Photo courtesy of the late Beryl Mather.

Figure 18. Norman/Olin Mather House foundation, view looking west and toward Dixon Hollow Road. A 1 x 10 m trench unit was excavated to determine the orientation of the foundation.

Figure 19. Grove Mather House foundation, view looking north.

Figure 17. View of Norman/Olin Mather House c. 1912 from Dixon Hollow Road, view looking east. Photo courtesy of the late Beryl Mather.

Figure 18. Norman/Olin Mather House foundation, view looking west and toward Dixon Hollow Road. A 1 x 10 m trench unit was excavated to determine the orientation of the foundation.

Figure 19. Grove Mather House foundation, view looking north.

Figure 20. The Mather Mill c. 1912 from Dixon Hollow Road, view looking southwest. Photo courtesy of the late Beryl Mather.

Figure 21. Old Mather foundation, view looking west and toward Dixon Hollow Road.

Figure 22. Foundation to unknown structure on terrace above Old Mather foundation.

Figure 23. Adams House foundation. The intact wall in the back of the photograph is the west side of the house. The front of the house is located along the crumbled foundation on the right side of the photograph.

Figure 24. View looking south from the southwest corner of the Adams House foundation. The corner of the main foundation is located in the foreground and the remaining foundation stones for the addition are running south from the corner.

the house ran from an adjacent hill to just before the creek. A side wall connected to this (what was originally thought to be a retaining wall) ran to the back of the house (Figure 19). It was evident from the units located within the foundation walls that the house never had a dug out basement like Norman's house. The units also showed signs of burning (e.g., reddish brown soil, burned glass and ceramics). The Mather Mill, which stood directly across from the houses has not yet been excavated due to time constraints and wet conditions (Figure 20). A surface collection, however, was conducted in the area around and inside the mill foundation.

The Old Mather House Area

The most obvious structure in this area is the remnant of a house foundation for what was likely the first house built by Norman Mather—one of the first houses in Dixon Hollow. This stone foundation, sitting against a steep slope alongside a side creek, was readily visible without much clearing (Figure 21). Test units (1 by 1 m) were placed both inside the foundation and just outside the foundation in order to look for traces of the basement floor and artifacts associated with the occupancy of the house. Surveying was conducted on a level terrace just above (and southeast of) where the house stood. The map showed a structure in that area but its exact location and the nature of the structure itself were unclear. A metal detector survey was conducted in this area and then a series of 50 by 50 cm test pits were dug in places where the metal detector indicated subsurface artifacts. Remnants of a stone foundation were found along the hill leading down to the creek and in the eastern portion of the area (Figure 22). The function of the structure remains unknown.

Adams House Area

The area named after the Adams family is located along the west-east road (unnamed) that ran uphill from Dixon Hollow Road to Canadice Lake Road. This area sits up on a hill, just east of the juncture of the two roads and where the Dixson house foundations lie. The area consists of a house foundation, located on the south side of the road and what appears to be a barn foundation located on the north side of the road. This house appears first on the 1872 map and may have been built around 1860 when Albert Adams bought the property from the Amos Dixson's estate. Since Albert's brother, Azel, also lived for a period of at least five years on or near Albert's land, it is possible or even likely that other members of the Adams family lived in this house.

Excavation of the Adams House area began in the fall of 2006 and continued through spring 2010. Only preliminary excavation of the barn area has been conducted, but comparison of the artifact assemblage with the house, including a high density of nails and other metal artifacts and a very low density of ceramics and other household artifacts, clearly shows that this was a barn. In total, twelve 1 by 1 m test units have been excavated to depths of between 30 and 60 cm. The east to west side of the house is approximately 11.5 m long and the north to south side of the house is approximately 6.5 m long (Figure 23). The house was oriented so that the front faced north and toward the road (and the barn across the road). There is also a nicely preserved well, still open, located about 8 m from the southeast corner of the house. There is clear evidence from a break in the foundation that the cellar door was located in the southeast corner of the foundation. The highest density of artifacts also came from the test units located just outside of where the door would have been. There is also evidence from the maps and intact foundation stones that an addition was located in the southeast corner of the house (Figure 24).

Archaeologically Dating the Structures

While the deeds are extremely helpful for identifying the dates, locations and costs involved with land transfers, they are not helpful for discovering the dates of construction and occupancy for each house. The older maps are also of limited value, because they may not have been accurate and often lack detail. Also, there are long time gaps between the maps, so that many occupants of the houses would not be shown. Consequently, the archaeological record provides important comparative data for understanding, at least in a general sense, when the excavated Dixon Hollow structures were occupied.

Window Glass

Window glass can give an indication of when a structure was originally built and remodeled as well as the length of occupation. These analyses are based on the idea that window glass increased in thickness throughout the nineteenth century and numerous formulae have been derived which calculate construction periods based on the mean thickness of window glass recovered from sites. The formula used for this analysis comes from Moir (1987). According to Moir, this type of analysis is useful when good sample sizes are taken from different parts of a site, when the length of occupation of a site is less than sixty years and when the structures are those associated with middle or lower class dwellings (which are less likely to have window glass replaced). Each of these criteria were met concerning the structures excavated at Dixon Hollow.

Listed below is the chronological order of households, beginning with the earliest, based on the calculations of dates by using the Glass Manufacture Formula (Glass Manufacture Date = 84.22 x [Glass Thickness in mm] + 1712.7) and expressed as a range using one standard deviation of + 7 years:

Old Mather House	—1823
Amos Dixson House	—1826
Dixon Family House	—1837
Norman/Olin Mather House	—1863
Grove Mather House	—1866
Adams House	—1850

The 1852 map, the earliest available, shows the Old Mather foundation (N.W. Mather), the Mather Mill (which was a woolen factory at the time), the grist mill and a structure that may be either of the Dixson houses, but it is unknown how early they were actually built. By the time the 1872 map was made, both of the Dixson houses are clearly present. The window glass dates for both structures correspond to early occupation dates in Dixon Hollow, but the Amos Dixson house is older. It is probable that this smaller house was built and occupied first by Amos Dixson and then the larger Dixson house was built a short time later. The Grove and Norman Mather residences, across from the wool mill, both appear first on the 1858 map and so the glass dates fall within or very close to the expected range. The later range of dates for these structures as compared with those of the Adams house, are likely due to the fact that the Mather houses across from the mill were occupied until close to 1920 and were more likely to have glass replaced.

Ceramic Assemblage

The average dates for the ceramic assemblages associated with most of the houses are lower than those calculated using window glass. However, it is common for ceramic objects such as tableware and food storage vessels to be curated over long periods of time. Norman and his earlier wife, Jane, would likely have brought dishes and other ceramics with them to their first residence in Dixon Hollow (Old Mather house) which would predate the structure. When he and his third wife, Nancy, moved to their new house across from the mill, they would have taken the dishes and crockery currently in use with them. When Grove moved into his house, likely with his first wife, Ellen, they would likely have also brought older ceramic pieces with them. Both of these events would cause the earlier ceramic dates to be earlier than the construction of the houses. The upper end of the dates for some wares from the Dixson houses and the Mather houses across from the mill date to the late nineteenth and early part of the twentieth century, close to the time when the houses were abandoned. The average ceramic date ranges are as follows:

Old Mather House	—(1785-1830)
Amos Dixson House	—(1825-1841)
Dixson Family House	—(1822-1850)
Norman Mather House	—(1820-1850)
Grove Mather House	—(1820-1855)

The data from the window glass and ceramic analysis clearly support the historic evidence that Dixon Hollow was mainly occupied from the early nineteenth century through the early twentieth century. Obviously the historic records contribute valuably to the dating of the occupations, but because the deeds and census records do not refer specifically to structures, it is still difficult to know exactly when structures were built and the duration of occupancy. In this regard, the archaeological evidence is very important, because it shows that the earliest structures likely predate the earliest known map by at least twenty years. The use of archaeological evidence alone would predict the general construction dates for the structures at Dixon Hollow.

Socioeconomic Comparison

Historic Records

Socioeconomic comparison of the households at Dixon Hollow can be viewed from a number of different sources, including census records which sometimes list the value of the real estate owned and/or personal estate, probate records, and wills. Evidence from the ceramics assemblage can also be used, although it may be impossible to separate the Dixson assemblage from the other family assemblages recovered from the Dixson house structure. Another potential problem with comparison of the ceramic assemblages is that there were likely renters in some of the structures at Dixon Hollow and also other owners. Additionally, the Dixson, Mather and Adams families were both mill owners and farmers, so it is also impossible to compare the socioeconomic status of farmers versus mill owners, at least within the Dixon Hollow artifact assemblage (Table 9).

Historic records suggest that the Dixson family was prominent in the Livonia area community. In addition to accolades in the obituaries of the various Dixson family members, they are mentioned, alongside other family names, as being one of the "old families of excellent stock...who, with considerable culture, that naturally comes with easy circumstances, rather looked down on the plod-

Table 9. United States Federal and New York State Census—occupations of Dixon Hollow residents.

Name	Census	Occupation
Norman Mather	1850-US Federal	Manufacturer
	1855-NY State	Wool Manufacturing
	1860-US Federal	Cloth Manufacturer
	1865-NY State	Manufacturing Wool Cloth
	1870-US Federal	Manufacturer and Farmer
	1875-NY State	Butter Tub Maker
	1880-US Federal	Pail Manufacturer
Grove Mather	1850-US Federal	Manufacturer
	1855-NY State	Manufacturer
	1860-US Federal	Cloth Manufacturer
	1865-NY State	Manufacturing Cloth
	1870-US Federal	Manufacturer and Farmer
	1880-US Federal	Pail Manufacturer
	1900-US Federal	Farmer
	1910-US Federal	Own Income
Otis Mather	1910-US Federal	Farmer
	1915-NY State	Farmer
	1920-US Federal	Manufacturing (cider mill) and Trucking
Amos Dixson	1850-US Federal	Miller
	1855-NY State	Farmer
Albert Adams	1860-US Federal	Miller
	1865-NY State	Farmer and Miller
	1870-US Federal	Carpenter
Axel Adams	1865-NY State	Farmer
	1870-US Federal	Farmer

ing denizens of 'Slab City'..." (Livonia Gazette n.d.). "Slab City" was the name given to Hemlock because of its active sawmill and was used by "loud fellows of the baser sort... when they at any time wished to be notedly offensive" (Livonia Gazette n.d.). It is also noted that these families, including the Dixsons, lived in Livonia Center (just north of Hemlock) and brought their grist to the mill at Hemlock. This recollection may have been from a time before the Dixsons operated their own mill and shows the prominence that these early families had within the hamlets surrounding Livonia. It also demonstrates the differences in social prestige associated with farmers and millers.

The census records indicate that many of the residents of Dixon Hollow were able to send their children to school. Although it is unclear where most of these children attended school, they are listed on the census records as being "away at school." Amelia Mather, Norman and Nancy's daughter, was sent away to a school in Lima, a town about ten miles north of Hemlock, sometime during the Civil War years, as is referenced in one of the family letters. It is unclear if the older children were also educated away from home, but they were kept in school until the age of 17. The 1860 census notes that John, Jennie, Amelia, Willie, and Frank (ages 20-8) all attended school within the previous year. Education was clearly important to the residents of Dixon Hollow and, as census records indicate, all of the residents of Dixon Hollow could read and write.

Another important piece of evidence regarding the socioeconomic status of the residents of Dixon Hollow lies within the Federal Census and New York State Census records which, for some years, lists the value of the real estate and/or personal estate of each head of household

Table 10. United States Federal and New York State Census Records—real estate, personal estate, and dwelling values.

Resident	Census	Real Estate Value	Personal Estate Value	Dwelling Value
Norman Mather	1850	5,500	----------	----------
	1860	2,000	1,000	----------
	1865	----------	----------	500
	1870	9,000	10,000	----------
	1875	----------	----------	700
Grove Mather	1860	Not listed	Not listed	----------
	1865	----------	----------	1100
	1870	Not listed	Not listed	----------
	1875	----------	----------	800
Amos Dixson	1850	6,600	----------	----------
Albert Adams	1860	1,000	1,000	----------
	1865	----------	----------	700
	1870	4,000	1,000	----------
Cynthia	1875	----------	----------	500
Azel Adams	1865	----------	----------	300
	1870	240	1,125	----------

Data taken from Federal Census (1850, 1860, 1870) and New York State Census (1865, 1875) records. Dashed lines indicate where census did not ask information. The 1855 New York State Census and 1880-1910 Federal Censuses did not ask about such values.

(Table10). These values vary between years, but clearly Norman Mather was doing very well around the year 1870, when his real estate and personal estate values peak at $9,000 and $10,000, respectively. This is the highest value recorded in Dixon Hollow. It is important to note, however, that Norman and Nancy sold their real estate to Phyla in 1878 for $5,000. The deed only mentions the land that was sold, and does not mention the mill and other structures. If he and Nancy lived on this money until his death in 1884, he did not have much of it left. The appraisal of his estate at the time of his death was only $223.90. Likewise, Amos Dixson listed his highest real estate value, as $6,600 in 1850 and by 1860, two years after his death, his estate was liquidated to pay a $2,870 debt. By contrast, in 1870, two years before his death, Albert Adams listed his real estate value at $4,000 and his personal estate at $1,000. When he died in 1872, his estate was worth over $3,000 which did not count the value of his land. His estate continued to expand through the 1870s as the mills and farmland were rented out and provided a steady income to his widow, Cynthia, and son, Albert (as discussed earlier).

Ceramic Analysis

The ceramic pricing index created by Miller (1991) can give at least a very general idea of relative socioeconomic status, despite the lack of stratified deposits and problems with multiple occupancies. The ceramic assemblages demonstrate that the Dixsons, Mathers, Adams and likely other families in Dixon Hollow had a very good standard of living. Much of the ceramic assemblages in these areas are represented by more expensive wares, including whitewear, pearlware and ironstone decorated with transfer prints of various patterns and colors and painted designs (Figures 25–28). Most of these ceramics were concentrated in the Dixson house, Olin Mather, and Adams' house assemblages. The Amos Dixson house assemblage had proportionately more undecorated wares and edged wares that were cheaper to purchase. The older portion of the Old Mather house assemblage was also dominated by cheaper wares such as those with annular designs, but later portions of the assemblage contained transfer printed designs in a variety of colors. Similarly, the Adams' house assemblage contains a

Figure 25. Whiteware mocha teacup fragment with blue transfer print from Dixson House.

Figure 26. Relish dish rim with blue transfer print from the Dixson House.

Figure 27. Staffordshire Whiteware sherd from Norman/Olin Mather House.

Figure 28. Pearlware rimsherd with molded edge from Amos Dixson House.

variety of different ceramic types, ranging from cheaper annular, edged and painted designs to transfer print whitewear and porcelain. Unfortunately, much of the ceramic assemblage for the Grove Mather house was burned and cannot be used for analysis. This area, consequently, is underrepresented with respect to ceramics that can be studied. Porcelain, the most expensive type of pottery, was found in all of the assemblages, including one cup shard from the Olin Mather house, three vessels from the Grove Mather house, and six vessels from the Dixson Family house. A fragment from the neck of a porcelain perfume bottle was found in the Amos Dixson house and a porcelain doll fragment was found in the Dixson Family house assemblages.

Despite the problems mentioned earlier with respect to linking portions of the ceramic assemblages to particular families or generations, is it helpful to use the ceramic types present in the houses to generally say something about socioeconomic status among the residents of Dixon Hollow. Even though they were all primarily millers, farming was also an important means of income (New York State Census

Records: Population and Agricultural Statistics). This multi-faceted approach to making a living seemed to provide the families of Dixon Hollow with the expendable income necessary to purchase nice dishes. The Dixsons likely owned and operated the store and would have purchased goods such as pottery wholesale, which would have been cheaper than if the Mathers had purchased the same pottery from their store.

Other Artifacts of Interest

Even though letters are not available for the Adams family, material culture and other historic documents link Albert and his family to the Civil War. A Confederate Infantry button was found just outside of the Adams' house foundation. There are no records indicating that Albert or Azel Adams were enlisted in the army, but a soldier named George McCrossen and his family lived with Albert and Cynthia in the summer of 1865. George fought for the Union Army in the 188th New York Infantry and may have brought the button home from the war as a souvenir. George's wife, Jane, and son, Franklin, may have lived with the Adams during the war. Their relationship to Albert and Cynthia, however, is unclear.

Another interesting artifact found in the Adams house area was a portion of a bottle which once contained Lydia E. Pinkham's Vegetable Compound. This medicine was manufactured by Lydia E. Pinkham, a devoted suffragette and abolitionist, beginning in 1875 and continuing well into the twentieth century (Unknown author, n.d. "Lydia Pinkham" article). The concoction is believed to have contained licorice, chamomile, pleurisy root, Jamaica dogwood, black cohosh, life plant, fenugreek seed and dandelion root and was marketed for women's complaints, especially those associated with menopause (Linden n.d.). It has also been noted that Lydia E. Pinkham's Vegetable Compound was used by women as an abortative (Wilkie 2003). The use of the compound as an abortative may have come from the inclusion of black cohosh, which has been used in native folk medicine to induce contractions during childbirth. Since the medicine was manufactured after 1875, this places its use within the context of Cynthia Adams' occupation of the house as well as that of Lucy Salinger.

Conclusion

It is easy to become engrossed in thinking about what life was like for the people of Dixon Hollow, especially with respect to community, family, and loss. An important pattern that emerged when poring over census records was the common occurrence of maternal, infant and childhood mortality; most of the families in Dixon Hollow experienced the loss of a child, and premature loss of parents and spouses. Infectious disease was a common cause of early death; dyptheria, in particular, often took numerous family members within short periods of time. It is difficult to imagine living at a time when parents had so much worry. Another prominent theme, however, that emerged from the research was the importance of community and the interconnectedness of the people at Dixon Hollow. It is clear from the probate records that they relied on one another for acquiring the necessities of nineteenth century life. The Mather letters, especially, speak of love, family, and community.

The combination of historic documentation, ethnohistorical accounts, and archaeological evidence has created a colorful and dynamic picture of life in Dixon Hollow. In addition to conducting archaeological excavations in Dixon Hollow for the past eight years, recent historic research has added greater depth to the understanding of life there. The people themselves have a greater voice in telling their own narrative.

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A number of St. John Fisher and SUNY Geneseo students worked on artifact analysis as part of work-study programs or as directed studies offered by the respective colleges. The artifacts generated by the Dixon Hollow site excavation, which are curated at St. John Fisher College, provide not only important information about the material culture and lives of the people who lived there, but also allow students to gain experience in archaeological labora-

ary analyses. These students include Daniel Poirier and Nick Koehler (Saint John Fisher College) who analyzed the 2004 nail assemblage, Amberly Rounds (Saint John Fisher College) who analyzed the 2004 window glass assemblage, Sarah Leonard, Emily Isler, David Crego and Kathryn Meyers (SUNY Geneseo) who studied the 2003-2005 ceramic assemblage, Sarah Leonard who completed an ethnohistorical study (SUNY Geneseo), and Luke Caretta (Saint John Fisher College) who assisted in many ways, including cataloguing and analyzing artifacts and supervising students. Lastly, thanks to the numerous students who helped to uncover Dixon Hollow's past. Their dedication and hard work allowed for the excavation and analysis of the site. Finally, I would like to thank the late Ms. Beryl Mather, former resident of Dixon Hollow and an amazing lady, for taking the time to share with us her experiences as a young girl in "the hollow" and for risking life and limb to trek into the outlet to show us her girlhood haunts.

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The Upper Trapps Gap: Two Years of Excavation at a Prehistoric Rockshelter

Anne Sando and Lucille Lewis Johnson, Vassar College, Mid-Hudson Chapter, NYSAA

The intent of this paper is to present the geological and archaeological history of the Shawangunk Mountains in upstate New York, to detail the excavations done over two years at the Upper Trapps Gap Rockshelter and to present the analyses of collections retrieved from those two seasons. The Upper Trapps Gap Rockshelter, located directly off of Routes US 44/ NYS 55, between New Paltz and Kerhokson where they cross the gap in the Shawangunks, is the site of a prehistoric encampment and also shows signs of recent habitation. Special attention will be paid to the prehistoric lithic and ceramic assemblages, both in terms of variation over the site, and of their general implications for prehistoric Native American life. We also examine and comment on the ongoing usage and occupation of such sites in the modern era.

Introduction

The Northern Shawangunk Mountains contain multiple rockshelters formed in their glacial talus slopes and eroded conglomerate cliffs, which have been used as human habitations for the past 10,000 years. The Upper Trapps Gap Site is of particular significance as it lies directly adjacent to a major prehistoric pathway that crossed the ridge at the gap, suggesting that the shelter itself may have been a well-known and often used rest area for groups of people moving back and forth across the mountains. Translated from the language of the Munsee Lenape people who inhabited the region until relatively recently, the name 'Shawangunk' means "passageway to the south," pointing to the importance of the area as a migratory crossroads. In choosing to excavate the shelter, we also considered the fact that it lies on a modern hiking trail and might be subject to disturbance by passersby.

In the fall excavation seasons of 2006 and 2007, the junior author took the students of a Vassar College Archaeological Field Excavation class to the Upper Trapps Gap Rockshelter on the Mohonk Preserve to learn about archaeological field methodology through excavation of the site. The seasons went from September to December, with each Saturday spent in the field, weather permitting. Eight students participated in the 2006 fall season (a total of eleven days was spent at this site). Four students excavated for three Saturdays in the 2007 season. A total of fourteen units were opened, with closing depths ranging from 30 to 96 cm at the deepest point. Analysis of the collections was performed during the summer and fall of 2007 by the senior author.

Geological History

Two main types of rock define the region; soft Martinsburg shale dating from the Ordovician era and hard Silurian conglomerate, the result of the fusion of quartz and sand pebbles deposited in a ridge on the northwestern side of a large inland sea which covered the region roughly 420 million years ago (Snyder and Beard 1981:8). The mud from that lake became the soft shale upon which the conglomerate lies. The entire Shawangunk range, the northern end of which is most pertinent to the work at the gap, is part of the Folded Appalachian Zone created during the Taconic and Appalachian Mountains periods of uplift and faulting (Kiviat 1988:3). Later on, glacial movement ground away the eastern edge of the ridge, leaving exposed the southeast facing bluffs of such areas as Bonticou crag. In recent geologic history, the Wisconsin ice sheet covered the region and the vestiges of its creep and eventual retreat remain obvious: striations on standing rocks, erratic boulders, and significant talus on the hillsides.

The major streams of the region (Stony Kill, Sanders Kill, Peters Kill and Coxing Kill) originate in the hard, quartz conglomerate, a stone resistant to erosion. Therefore, the mineral content of the streams is low and the acidity high, making the conditions in higher stretches of the streams poor for the large majority of aquatic life forms. Where the streams run into the softer, more basic soils produced by the older shale, the organic content of the streams increases as does the number and variety of aquatic species (1988:10). Thus, one can begin to establish a more nuanced understanding of the resources that would have been at hand for native peoples. Likewise, the conglomerate cliffs and the glacial talus slopes are features which dictated the form which local habitation took by creating the heaps of rock that formed the shelters which were utilized by diverse groups of humans over time.

Archaeological History

A few archaeological excavations of varying levels of professionalism were conducted across the ridge during the twentieth century. In the early 1900s, the New Jersey State Archaeologist Max Schrabisch surveyed the entire region from the Stony Kill to the Coxing Kill, roughly recording the locations of rockshelters that he deemed important and later returning to dig at many of those sites, including the Upper Trapps Gap Rockshelter. Schrabisch mentions that the majority of the remains he uncovered there were located in the center section of the site. In this central area, he uncovered a fire pit with an alleged depth of 3 ft, suggesting large-scale and intense burn. He notes two soil layers, a dark topsoil and a yellowy sand beneath that, the first containing "numerous chips and sherds" and the latter holding "deer bones as well as a leaf-shaped scraper of chert, and the tip of an arrow point, very sharp and slender, of flint" (Schrabisch 1936: 123). In total, he lists the number of potsherds collected as less than 300 (the exact number is unfortunately not given) from roughly 15 pots that he identifies as "distinctly Algonquin" (Schrabisch 1936: 123).

Max Schrabisch excavated at the Upper Trapps Gap Site before 1919 (Figure 1; Schrabisch 1936). Unfortunately, his notes are often confusing and difficult to decipher, and his reports lack specific data with which one might reconstruct the work he did. Likewise, the descriptions he provided of his excavation methods are foggy at best. He allegedly dug a trench along a rock, which appears from his drawing and photo to be the enormous slab of roof rock which covers roughly half of the shelter's floor space toward the left of the shelter, but we could not relocate that trench and found numerous artifacts in the area in which Schrabisch's sketch showed the trench to be (Schrabisch 1936:123). Furthermore, we have not been able to locate Schrabisch's collection from the Upper Trapps Gap Site. It is not at the New York State Museum, nor at the New Jersey State Museum. Of his excavation, Schrabisch states:

> Nearly all the remains were buried in the center section. Its floor was level and covered with black dirt, while the rock on the left and the back wall were smoke-stained. A trench dug along this rock, from the shelter line to the back wall, revealed a firepit, charged with charcoal and burnt pebbles. It proved to be nearly three feet deep, its greatest depth being close to the rock. All through this bed of black soil, numerous chips and sherds were noted, the latter occurring even in the bottom layer, where it merged into yellow gravel. Associated with these were deer bones as well as a leaf shaped scraper, of chert, and the tip of an arrow point, very sharp and slender, of flint.
>
> The number of sherds unearthed here was not far from three hundred. Although most of them were plain, some showed cord-markings and various designs of ornamentation of a type distinctly Algonquin. Among the decorated pieces no less than eight different patterns could be ascertained, as remnants of as many vessels. As for the others, they could be assigned to at least seven more pots, thus making a total of fifteen, used under this rock in Indian days [Schrabisch 1936:123] (Figure 1).

Figure 1. Max Schrabisch's Photograph and Drawing of The Upper Trapps Gap Rockshelter (after Schrabisch 1936:123).

The late Dan Smiley, Mohonk Preserve naturalist until his death in 1989, performed a small-scale excavation at the site with Boy Scouts in 1931; the artifacts removed from the site included 18 Neville points.

The second professional archaeologist to work in the region was Leonard Eisenberg. Eisenberg excavated at the Ski Minne Shelter in the late 1970s, (see Kaplan and Johnson, this volume). In the summers of 1982 and 1983 Eisenberg excavated with a SUNY New Paltz field school at the Mohonk Rockshelter Site at Rhododendron Swamp.

noted by Schrabisch in his survey as "an inferior shelter, as its roof hangs over but little and it contained nothing but a few chips" (1936:123). Eisenberg's investigation of the site revealed a large array of point types, resulting in the dating of Shawangunk inhabitation back to the Clovis period. The finds were a revelation, as a Clovis date for Hudson Valley prehistoric occupation was far earlier than anticipated. The site yielded 210 projectile points and 130 potsherds, which Eisenberg identified as belonging to a single pot. Eisenberg found 55 Neville points which, when combined with those excavated by Dan Smiley, constitute the largest collection of Neville points from any single site yet found, 73 in total, suggesting that the Hudson Valley area may have been the center of that technology (Eisenberg 1991:161).

Beyond these investigations, the archaeological resources of the area remain relatively unexplored, a fact that makes such projects as those run by Vassar College significant in understanding the area. In the past four years, the Upper Trapps Gap Rockshelter has been explored in depth. In addition, a large rockshelter in the conglomerate cliff face at Bonticou crag has been investigated and the Burger Site at Minnewaska State Park is currently being studied. Over the summer of 2007, Leah Weissburg, a student at Vassar College, along with Johnson, other Vassar students, and the staff at the Dan Smiley Research Center, conducted an extensive survey of the same areas that Schrabisch had explored. They focused on talus slopes and areas with eroding conglomerate faces, in the hopes of locating more shelters hopefully untouched by Schrabish. The survey ultimately recorded 58 potential shelters (Weissburg 2007).

Vassar Excavations at the Upper Trapps Gap Site

Site Description

The shelter itself, lying approximately 300 m above sea level, is c. 5 x 2 ½ m in size, large enough to sleep possibly four to five people. The roof is a large slab lying diagonally across other supporting rocks. At the right side of the shelter, as you face out of it, is a large fallen roof rock slab that dominates the floor space in the shelter. To the left of that is a solid, essentially flat, ground area of smaller roof rocks, dark topsoil and leaf litter. In front of the shelter is an open area of soil and rock and in front of that runs the bed of a small stream, usually dry. The shelter itself faces south, the awning opening toward the hiker's trail that cuts roughly parallel to the western flowing stream (Figure 2). The shelter lies at the high point of the saddle within roughly 50 m of the road.

Methodology

During the two seasons, we excavated eleven 1 sq m test pits and partially excavated four additional ones (Figure 3). The partially excavated squares included two that became water-logged and, therefore, could not be continued, and two partial squares abutting the large rock. Excavation units were organized so as to sample remains from both inside and outside of the shelter. Ten units were within the shelter, four distributed across the small open area between the shelter and the small stream, and one in a smaller shelter located above the main shelter. All excavated dirt was put through ¼ in screens with ⅛ in screens beneath them. When there was enough rain to fill the small nearby stream, some water screening was possible; however, the majority of the screening was dry. Layers were defined by distinct changes in soil properties, most importantly color and matrix, and the soil readings were obtained using a Munsell color chart. The texture and sand content of the soil were also recorded. Levels were measured in 10 cm increments starting from the beginning of each new layer. Subdatum points were recorded on a total station.

The units outside of the shelter were 1N6E, 2N9E, 3N9E and, adjacent to the front of the large fallen roof rock boulder, 3N5E. All of the other units were either under or just outside of the overhang. Unit 6N3E was a partial unit (1 by ⅔ m) squeezed between the roof rock boulder and the back wall of the shelter. Unit 7N11E was at the eastern end of the pit where the ground rises slightly and dirt runs through a small hole from above into the main body of the shelter. Another unit, UT-1, was opened on top of the rock shelter in the hopes of determining whether or not the roof was utilized for any specific activity.

Figure 2. Upper Trapps Gap Rockshelter, Spring 2006.

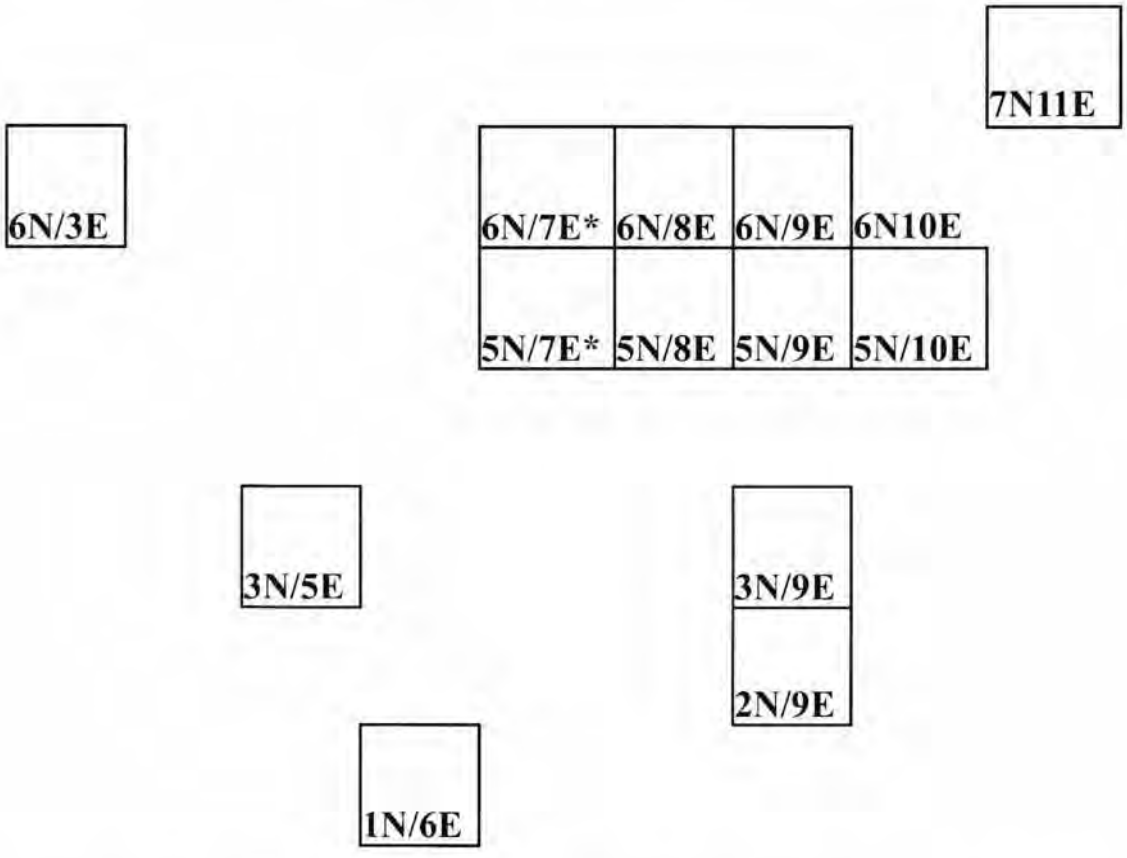

Figure 3. Upper Trapps Gap Rockshelter Excavation Grid.

Analysis

We hoped that analysis of the assemblages would reveal information about travel over the ridge and about specific use of the Upper Trapps Gap Site, as compared with other sites in the area, particularly the Mohonk Rockshelter. The artifact assemblage consisted of 879 items (Table 1). By examining certain attributes of the flakes, the points, and the prehistoric ceramics we were able to reconstruct certain aspects of prehistoric lifestyle. The historic collection reflects periods of time since the coming of the Europeans and reveals information about more recent occupants.

Lithic Assemblage

The lithic assemblage consists of human-made tools, opportunistic tools (such as hammerstones), and debitage (flakes and fragments) (Table 2a).

Table 1. Artifact Assemblage

Lithic	Ceramic	Historic	Total
582	83	214	879

Table 2a. Lithic Assemblage: Types

	Number	Percent
hammerstones	5	0.9
flakes	397	68.3
fragments	120	20.7
points	10	1.7
cobbles	7	1.2
chunks	42	7.2
total lithic	581	100

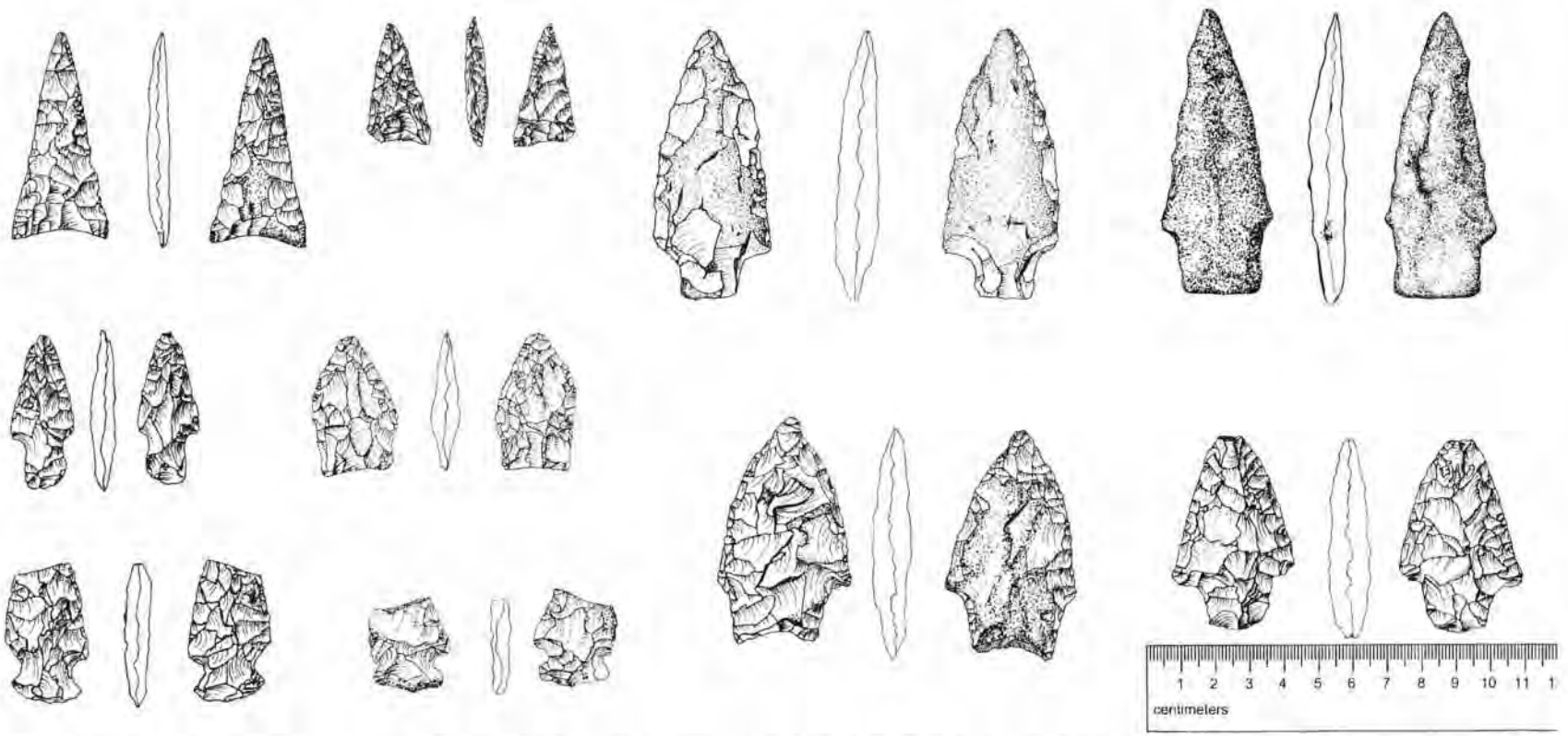

Figure 4. Projectile Points from the Upper Trapps Gap Rockshelter. Top Row: Madison, Levanna, Stark, Stark; Middle Row: Lamoka, Fox Creek; Bottom Row: Brewerton Side-Notched, Brewerton Side-Notched, Snook Kill, Snook Kill.

Formal Tools

Ten projectile points of varying sizes and typologies (Figure 4), a broken tip, a broken base, and a crescent-shaped scraper comprise the total formal tools found at the site. The tools found during the 2006 season represented a range of styles and time periods. The earliest are a Fox Creek point, dating from the Late Archaic, and a Lamoka point, dating from 3500-2500 B.C.; the latest is a very finely crafted Levanna point dating from A.D. 1300-1800 (Ritchie 1997: 29, 33). Other styles represented are Snook Kill, Brewerton, and Stark. The Stark points are large metasiltstone points with a rough texture. A crescent-shaped scraper (Figure 5) of the same material was also found which might point to a more diverse range of activities occurring on-site, such as butchering animals or scraping skins or wood. Most of the points came from the central units under the overhang, confirming Schrabisch's conclusion that that area was one of more intense activity. The two points from the 2007 season consist of one small, triangular dark chert Levanna point and a larger, lighter chert Fox Creek point with a grainier texture. Both of these points were exposed along the sides of the large rock moved on the second day of the 2007 season.

Although the presence of formal tools certainly suggests that both point usage and production occurred on site, a more regional perspective demonstrates that the Upper Trapps Gap Rockshelter may have been one of relatively low lithic activity. The 201 points which Eisenberg excavated at the Mohonk Rockshelter provide a key comparison to the 11 points total (including Schrabisch's point tip) found in the Upper Trapps Gap Site suggesting that the site may not have been a place of intense manufacture or usage.

Opportunistic Tools

Five hammerstones demonstrating signs of wear were found at the site (Table 2b). The sizes of these stones varied, the largest, as mentioned above, being a 934.2 gm rock with distinct, heavy wear on almost every ridge, and the smallest weighing 246.9 gm. A possible fire-cracked rock was found in Unit 6N3E, the small pit behind the large roof rock boulder—a unit demonstrating significant evidence of fire. One manuport, seven cobble flakes, and forty-two chunks were also found across the site.

Figure 5. Crescent Scraper.

Table 2b. Lithic Assemblage: Weight, gms.

	Mean	Median	Range
cobbles	185.4	172.4	78.6-360.9
hammerstones	599.6	545.4	246.9-923.7
chunks	26.2	7.9	0.2-190.2
flakes	1.1	0.5	0.05-25.8

Table 3a. Debitage Flakes: Weight

	Number	Percent
below 0.5 gm	218	54.9
0.5 - 1 gm	83	20.9
1.01-5 gm	81	20.4
5.01-10 gm	7	1.8
10.01-15 gm	2	0.5
15.01-20 gm	4	1
20.01-30 gm	2	0.5
Total	397	100

Table 3b. Debitage Flakes: Cortex

Dorsal Cortex	Number	Percent
None	382	97
Less than 1/2	9	2
More than 1/2	4	1
Total	395	1

Striking Platform	Number	Percent
Cortical	12	3
Not Cortical	385	97
Total	397	100

Debitage

By examining specific aspects of the flakes gathered from the site, such as percent cortex, platform type, material, and distribution across the site and between layers and levels, one can collect a variety of information and begin to understand more specific aspects of site usage. Only those pieces

of debitage considered to be identifiable flakes were analyzed; fragments, or chipped pieces lacking bulbs due to breakage, were recorded but were subject to no further analysis. The debitage assemblage consisted of 397 analyzed flakes and 120 fragments.

Through an analysis of weight, percentage cortex of the flakes and the type of platform, we can begin to guess at which reduction stages were occurring at the site (Tomka 2001). Although the largest flake found at the site weighed 25.8 gm (a fairly substantial size), the vast majority of the debitage belonged to a significantly lower weight class: 54.9% of all flakes weighed below .5 gm and 75.8% were below 1.0 gm (Table 3a). The low weights of the flakes suggest that the later stages of flintknapping took place at the site. This same trend was roughly represented across strata, all layers demonstrating similar if not nearly identical percentages. Such a statistic is interesting because it suggests that, in terms of lithic usage, the site was used in similar ways across its history.

Earlier reduction stages usually produce larger flakes, with greater cortex and more cortical platforms, since frequently one attempts to remove the tough rind on the stone before refining it into a tool. Flakes from the Upper Trapps Gap Site demonstrated extremely low percentages of cortex: only 3.8 percent of all flakes had any cortex at all, and none had entirely cortical dorsal sides (Table 3b). In terms of platforms, only 3.0% demonstrated signs of cortex on the striking area (Table 3b). By looking at the weight, platform type and dorsal side cortex percentage, we can guess that knapping work at the site usually began in the later stages of reduction.

The conjunction of the large worn hammerstone with the later reduction stages represented at the site appears to be a discrepancy; the chances of someone using a 900 gm hammer to produce a .1 gm flake are slim. Therefore, the hammerstone was probably used for other domestic functions involving grinding and pounding.

Schrabisch, although an untrustworthy source, mentions the discovery of thousands of flakes in a Sander's Kill shelter (Schrabisch 1936: 97) and 3000 flakes at the Huckleberry Swamp Site, ten times the number (397) we found in the Upper Trapps Gap Site. The scale of production evident in the sites explored by Schrabisch and Eisenberg suggest consistent long-term use, whereas the Upper Trapps Gap shelter, a comparatively small site, lying on a migratory or frequently traveled Indian path, may have involved more transitory usage.

Another valuable method for making inferences about human behavior and lifestyle from the debitage assemblage is examining the types of lithic materials being used. The majority of stone from the Upper Trapps Gap Site was chert

Table 4. Lithic Materials

All	**Number**	**Percent**
Chert	96	70
Metasiltstone	11	8
Siltstone	21	15
Quartz	2	1.5
Quartzite	6	4
Sandstone	2	1.5
Total	138	100

Cherts	**Number**	**Percent**
Black	10	10
Dark Grey	27	28
Medium Grey	38	40
Light Grey	2	2
Other	19	20
Total	96	100

of varying colors (63.7%). The second most predominant type was siltstone (15.2%) and the third, a grainier metasiltstone (8.0%) (Table 4). In most cases, chert is the most desirable stone to work with, as it chips easily and smoothly, and produces sharp cutting edges. The fairly high percentage of it at the site may mean that inhabitants had relatively good access to desirable materials. The cherts are predominantly from local sources, but source analysis indicates that some comes from at least 100 mi to the northeast of the site (Rieth and Johnson 2011).

Comparing the various chert flakes to those of siltstone and metasiltstone reveals that, in general, different materials were producing flakes of essentially similar weights. A few small variations do stand out. Both medium grey chert and siltstone produced somewhat larger flakes than the other material types, suggesting that the tools made from them were reduced from earlier stages in the flintknapping process or that the properties of the stone were more conducive to larger flakes.

Lithics Summary

Across the site as a whole, the knapping hot spots were 5N10E and 6N8E, which produced, respectively, 115 and 55 of the 397 total flakes. UT-1, the pit on top of the shelter overhang, only produced one small pressure flake in the very last screening, providing little information but suggesting that some knapping may have taken place nearby. In general, it appears that lithic activity was centralized, occurring largely in the main flat area just below the overhang of the shelter.

Ceramics

A total of 83 potsherds were found during the 2006 season; 62 of those came from the cluster of units (5N7E-5N10E, 6N7E-6N10E) just outside and inside of the shelter, suggesting that the greatest amount of domestic activity utilizing pots was focused at this area. Interestingly, these units were also those that held the most flakes, matching Schrabisch's belief that this area was a locus of activity on the site. Brian Paul (2006) determined that the decorated potsherds (Figure 6) are Munsee Incised, dating to the Terminal Woodland and Early Historic period. A more thorough analysis of sherds from both seasons, performed by Amanda Burdine (2007), revealed 21 different lots, determined by decoration, surface treatment, color, and paste, each lot representing a different vessel. Coupled with the alleged 300 potsherds from the Schrabisch excavation, the total number of sherds found at the site to date is roughly equivalent to 400, a number significantly greater than the 130 potsherds uncovered by Eisenberg at the Mohonk Rockshelter. These pots testify to a more diverse range of activities occurring on the site, extending beyond those pertaining to hunting to include frequent domestic activities.

Organic Materials

The organic collection from the Upper Trapps Gap Rockshelter consisted largely of charcoal from Unit 6N3E (a total of 4½ 100 ml bags and 33 individual pieces), as well as 20 pieces of bone (mostly fragments), 20 pieces of wood, two snail shells, the casing of a seed and the remains of a sunflower seed. The seed casing has not been identified and the sunflower seed suggests historic rather than prehistoric usage of the site. Other organic remains included a nutshell, a piece of gum, and two pieces of coal.

The large amount of charcoal found in 6N3E was intriguing, as no signs of fire remain on the roof of the shelter, despite Schrabisch's assertion of fire staining;

Figure 6. Decorated Potsherds: Munsee Incised.

similar types of charcoal were eventually excavated in 3N5E, on the opposite side of the boulder, so it is believed that burning may have come from a wide scale fire that spanned a large portion of the site. Such could be accounted for by natural causes, such as a forest fire, or might be the result of large-scale intentional burning, such as for smoking meat.

Historic Period Materials

The Munsee pottery is complemented by the remains of seventeenth-century clay pipes (Figure 7). One fragment is decorated and we hope to be able to secure more information about it. The most numerous types of historic artifacts found at the Upper Trapps Gap Site are bottle glass, coins, bullet shells, various articles or pieces of clothing, utensils and trash.

Bottle glass constitutes the vast majority of the historic collection—over one-half of all the artifacts. This is not surprising, as even today evidence of drinking (most frequently of beer) is found in many of the shelters, but is even less surprising considering that the Upper Trapps Gap shelter lies adjacent to a hiker's trail and therefore attracts much public attention. Of the identifiable artifacts, soda bottles, including numerous fragments of a Hersheys Beverage Corp. bottle, were present in bulk, as well as the remains of beer bottles manufactured by Heineken.

In addition to casual use of the site, a hermit was known to have lived there in the 1970s and 1980s. Objects that are traditionally related to longer term usage of an area were found, such as parts of a wool sweater, two gloves, and even a razor, which probably relate to his occupation. The five coins found date between 1960 or 1966 and 1988, around the time of the hermit's occupation. Excavations also revealed soy sauce and mustard wrappers manufactured by the Wah Yoan condiments company in Jersey City, New Jersey.

Figure 7. Clay Pipes and Pipe Stem.

Discussion

The Upper Trapps Gap Site on the Mohonk Preserve has a long history of human occupation. Evidence suggests that the shelter has been used periodically from the late Archaic period on. The dominance of projectile points and small, cortex-free flakes among the prehistoric lithic remains suggests that hunting was a major activity of the inhabitants. Hunters apparently finished and repaired their tools at the shelter, the early stages of manufacture taking place elsewhere. The lithic materials suggest that inhabitants of the site were able to acquire good stone to produce their tools, preferring chert, siltstone, and metasiltstone over other materials. The geological analysis of these materials shows that most source locally; only one comes from a considerable distance to the northeast (Rieth and Johnson 2011).

The comparison of the remains from the Upper Trapps Gap Shelter and the Mohonk Shelter is complicated by the lack of clarity in Schrabisch's data and the absence of his collection. While Schrabisch reports that the Upper Trapps Gap Site contained "chunks of flint material, chips of flint, quartz, quartzite and jasper, arrow points, pieces of pottery, a hammerstone, heatstones, a few deer bones and a fireplace," he describes the Rhododendron Swamp Site as having "a few chips only." On the other hand, we found very little material at Upper Trapps Gap. While Eisenberg found a great deal at Rhododendron Swamp, he did not find significant amounts of pottery, while we did. Most of the materials found by Eisenberg were located on the terrace in front of the shelter, while we found none on our terrace. This may be due to periodic flooding by the adjacent stream washing the terrace materials downstream. Another problem is that the majority of our materials came from the area purported to have been excavated by Schrabisch. Either he missed a significant number of whole points and decorated sherds during the course of his excavation, or more likely, he left his trench open, and materials from the unexcavated area to the northwest of his trench slumped into the area he had excavated. This second explanation is supported by the fact that we could find no sign of Schrabisch's trench in the Trapps Shelter, while Eisenberg did locate Schrabisch's trench at Rhododendron Swamp.

The majority of points from both the Mohonk Rockshelter and the Upper Trapps Gap Site date to the Middle and Late Archaic period, suggesting contempora-

neous usage of both sites in a time of relatively intense habitation. Both sites also have a significant Late Woodland occupation, indicated by points and pottery at both sites. The low quantity of identifiable materials from the Terminal Archaic and Early and Middle Woodland periods remains to be explained. The high number of points from the Mohonk Rockshelter, when compared with the fewer lithic remains from the Upper Trapps Gap shelter, suggests that, although hunting and knapping did occur on the Upper Trapps Site, it most likely did not hold regional significance as a place of production and lithic activities whereas the Mohonk Site may have. In contrast, the Mohonk Rockshelter had 130 ceramic sherds from one pot, while the Upper Trapps Gap Site produced 400 potsherds from 21 pots, suggesting that activities pertaining to the preparation and cooking of food were important at that site. It seems likely that this shelter was used opportunistically by small groups of people camping for a few days on their way across the ridge, cooking and preparing food and re-sharpening tools before moving onward.

Our recent work at the Upper Trapps Gap shelter and the implications of the remains prove the archaeological significance of such sites. To date, relatively little professional work has been done in the region, but as more rock shelters are explored and their remains analyzed, we may begin to construct a far more textured impression of life in the valley uplands, examining the diversity of ways in which the shelters were used and the nature of the societies that used them.

Acknowledgements

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The Ski Minne Rockshelter, Shawangunk Ridge, New York

Jessica Kaplan and Lucille Lewis Johnson, NYSAA Mid-Hudson Chapter, Vassar College

The Ski Minne Rockshelter was excavated by Leonard Eisenberg and students in 1975. A reanalysis of Eisenberg's collections indicates that the shelter was occupied from the early Archaic period through to the present, with the heaviest occupation being in the mid to late Archaic period. The materials found indicate that the shelter was used as a camp by hunting parties. Of the three rockshelters on the ridge that have now been analyzed, Ski Minne is similar to Rhododendron Swamp/Mohonk Rockshelter, but different from Upper Trapps Gap Rockshelter. The two former were short-term, probably fall/winter hunting camps, while the third retains its uniqueness as a transit stop.

Introduction

In this paper we report on our reanalysis of the prehistoric materials recovered from the Ski Minne Rockshelter on the Shawangunk Ridge and compare these materials to those from the two other recently excavated sites on the ridge: the Mohonk or Rhododendron Swamp Shelter (Schrabisch 1919a; 1919b, 1936; Eisenberg1991) and the Upper Trapps Gap Shelter (Schrabisch 1919a, 1919b; 1936; Sando and Johnson 2008 and this volume) (Figure 1).

The Shawangunk Ridge is the northernmost extension of the Appalachian Mountains and separates the Susquehanna and Hudson drainages. As the Shawangunks continue to the south they become the Kittantinny Mountains and to the west, the Blue Mountains. The ridge itself is a composition of sedimentary shale and limestone capped by a metamorphic quartzite. The high cliffs of the Shawangunks rise approximately 1,000 to 2,000 ft above sea level (Cadwell et al. 2003; Eisenberg 1991). The conglomerate cliffs, characteristic of the ridge, are susceptible to the elements and therefore weather easily. Consequently, rockshelters are formed by the cavities left in the hard quartz rock walls after the conglomerate has eroded. Additionally, when the resistant blocks fall from the cliff, shelters are formed in the resulting talus slopes. These rockshelters provide temporary respite and protection from rain, wind or snow. In examining high elevation sites, the rockshelter is important for its role as a resting place for inhabitants traveling back and forth over the Shawangunk ridge and a camping place for high elevation hunters.

Archaeological research in the Shawangunks began in the early 1900s. The New Jersey State archaeologist Max Schrabisch was the first to document the importance of rockshelters along the ridge and to acknowledge the information held by these high elevation sites (1919a, 1919b, 1936). Schrabisch found and recorded the location of 25 rockshelters, 17 of which were located along the ridge. Schrabisch excavated at most of the shelters he encountered, although the extent of his excavations varied depending on his initial evaluation of the importance of the prehistoric occupation. Of the three rockshelters we are considering, Schrabisch primarily excavated the site of Trapps Gap. Schrabisch did not clearly document his excavation at Upper Trapps Gap and, unfortunately, the artifacts collected in the 1919 excavation cannot be located today. Furthermore, Johnson discovered during the 2007 excavation that Schrabisch did not backfill the site of Upper Trapps Gap after excavation was concluded, and rain and snow washed the backfill pile, and possibly many artifacts, downstream (Sando and Johnson 2008, this volume). It also destroyed the stratigraphy of the site. In order to recover any artifacts that might still remain, Upper Trapps Gap was re-excavated in 2006 and 2007 by fieldwork teams of Vassar College students led by Johnson. Recovered artifacts included 8 typed projectile points and 83 potsherds, the decorated ones being Munsee incised (Paul 2006). The Mohonk Rockshelter had little material visible on the surface, so Schrabisch's investigation was limited. Excavated in 1982 by Leonard Eisenberg and students from SUNY New Paltz, Mohonk Rockshelter has proved essential to the understanding of prehistory in the Hudson Valley region. Clovis points found at the site allowed Eisenberg to hypothesize a Paleo-Indian occupation of the region. Furthermore, the total of 55 Neville points recovered from the rockshelter is the largest collection of Neville points in New York State and second in the Northeast and confirms a major occupation around 7,170 to 6,560 years ago (Eisenberg 1991).

The Ski Minne Rockshelter is the focus of the current analysis (Figure 2). It is located in Minnewaska State Park, north of Route 44/55 in Ulster County, New York. The site lies approximately 1,120 ft above sea level, and measures 27 ft in width and 16 ft in depth. The lowest overhang of the rockshelter reaches a height of 11 ft and the opening of the

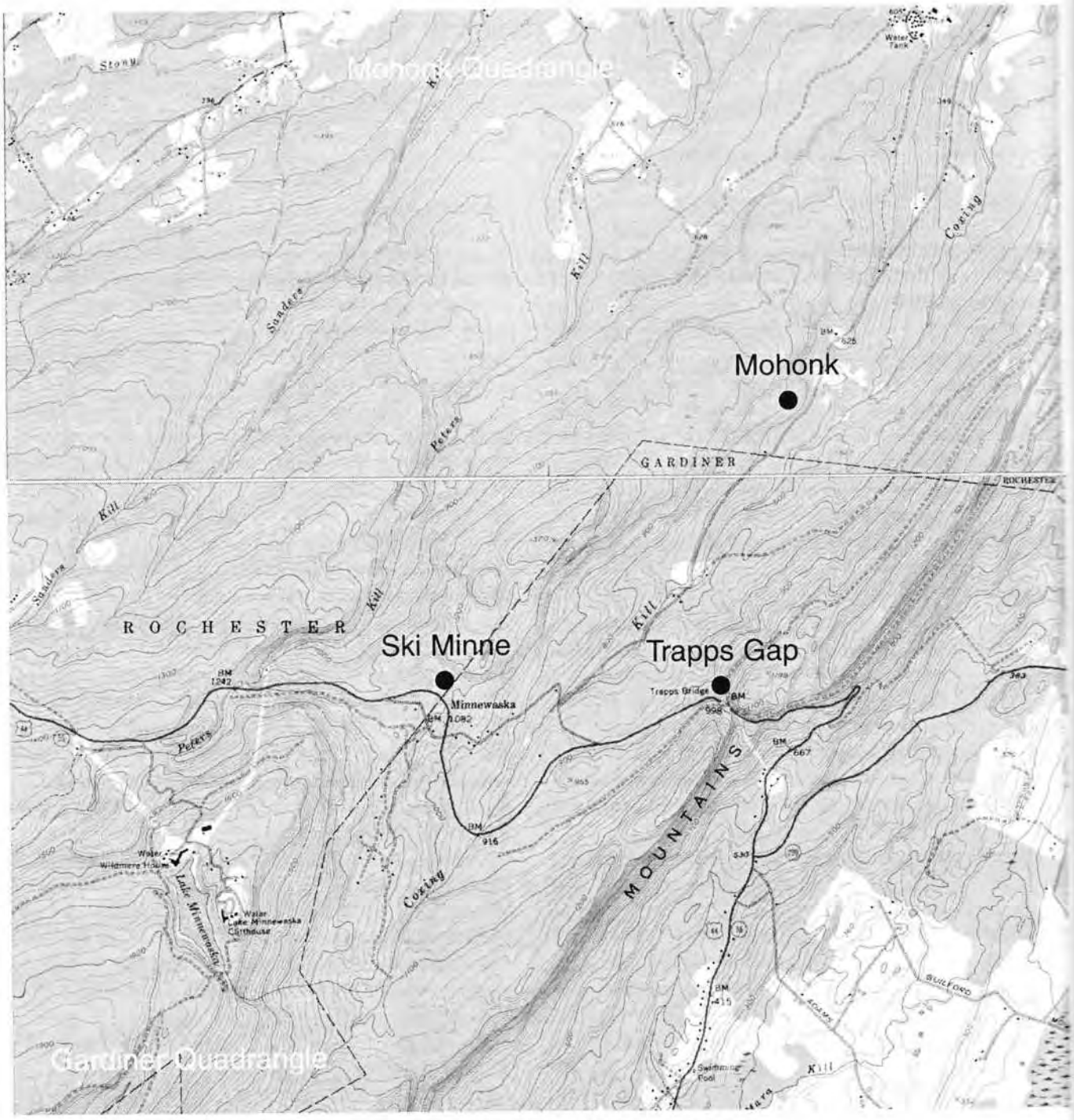

Figure 1. Location of Ski Minne, Rhododendron Swamp/Mohonk Rockshelter, and Upper Trapps Gap Sites.

shelter faces to the southeast. Schrabisch (1936) described a shelter that he called Minnewaska, but his drawing and photo do not correspond to Ski Minne, and Schrabisch's Minnewaska Shelter has not yet been re-identified.

In 1975, from June 25 to July 28, Leonard Eisenberg and the SUNY New Paltz Field School conducted an excavation of the Ski Minne Rockshelter. A total of 31 squares, or sections, measuring 5 ft by 5 ft were opened for excavation, with closing depths ranging from surface level to 22 in below sub datum (Field notes on file, Mohonk Research Preserve). Recovered artifacts were recorded by both vertical and horizontal provenience. The collection was analyzed by SUNY New Paltz undergraduates in 1983 (Barrett et al. 1983; Boshmil et al. 1983). The collection was

stored in a basement at SUNY that was condemned for asbestos contamination and was rescued and brought to the Mohonk Research Center with some, but not all, of its documentation.

In the summer of 2008, the authors, along with two Undergraduate Research Science Institute student researchers from Vassar College, began to re-analyze and document the Ski Minne collection. We wished to further investigate seasonality in the prehistoric use of the Shawangunk Ridge, to examine the patterns and relationships between Ski Minne and the two other recorded and analyzed shelters, and to understand the overall prehistoric use of the ridge.

Archaeology in the northeast, particularly in the Middle Hudson Valley region, has generally concerned itself with the excavation and analysis of the valley and lowland regions. However, the valleys can only provide us a limited picture of prehistoric life. Questions concerning settlement patterns as well as migratory movements cannot be answered without data from both valley and high elevation sites. As far back as the Paleo-Indian period, the Shawangunk Ridge was used by the prehistoric people of the region (Eisenberg 1991). Through our analysis of the prehistoric site of Ski Minne, we hope to demonstrate the value and necessity of research along the Shawangunk Ridge in determining prehistoric settlement patterns and seasonal migration.

Analysis

The first analysts (Barrett et al. 1983; Boshmil et al. 1983) of the Ski Minne Site collections identified a total of 90 typed projectile points. Our re-analysis concluded that, in fact, only 45 of the projectile points could be typed, many of the others being preforms or too fragmentary to type (Justice 1987; Ritchie 1971) (Table 1: Hafted Bifaces; Table 2: Unhafted Bifaces)[1]. In total, 14 different styles of projectile points were found at the site ranging in date from the Early Archaic to Late Woodland. The earliest point recovered was

[1]Hafted bifaces are those that have a clear haft element; unhafted bifaces do not have a clear haft element and may be lanceolate projectile points, or knives or preforms.

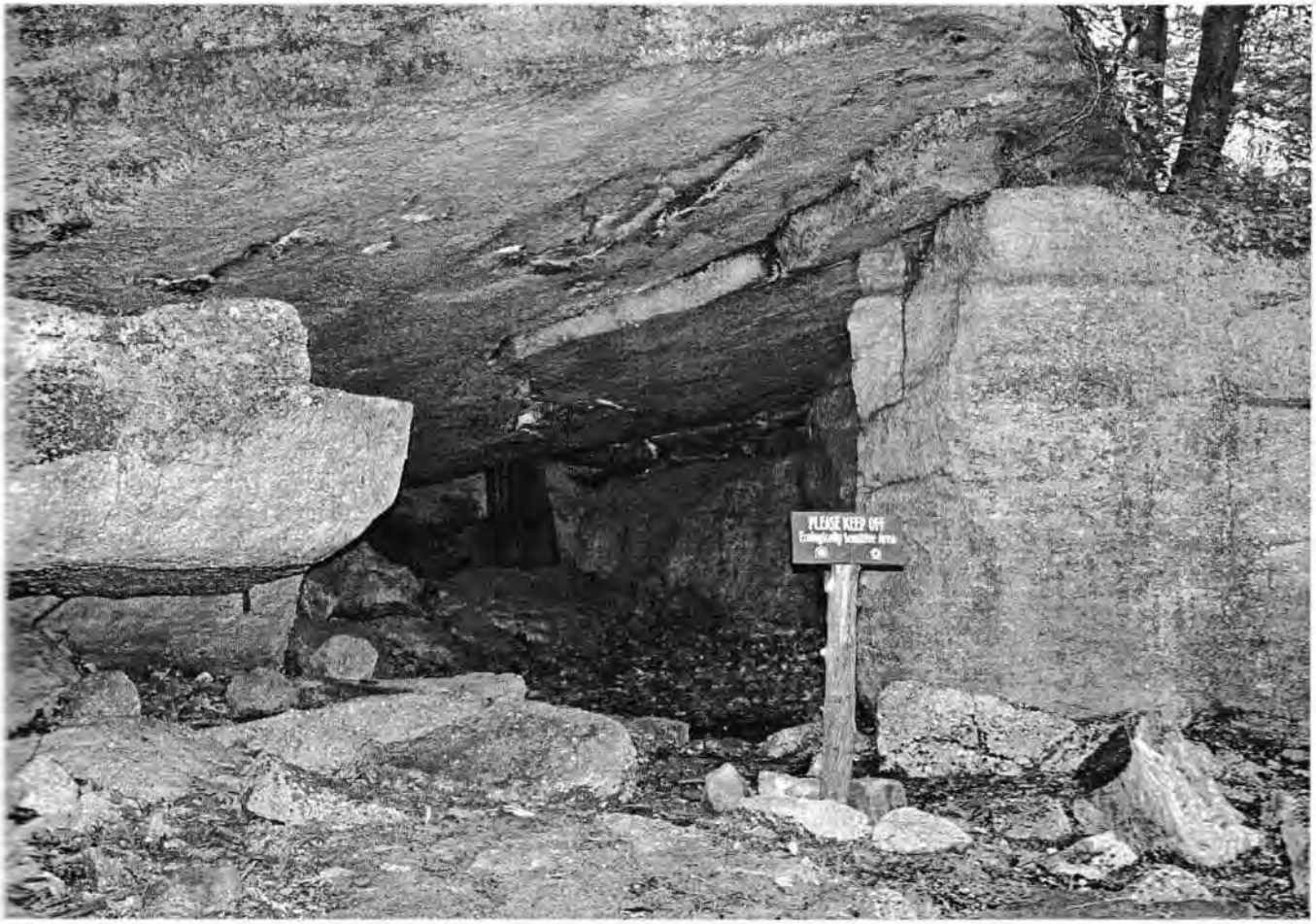

Figure 2. Ski Minne Rockshelter Site.

Table 1. Hafted biface measurements.

	Min.	Max.	Mean	Median	Mode	St. Dev.
Total Length (mm)	15	69	36.58	35	35	12.65
Blade Length (mm)	4.5	29	26.33	25	13	10.32
Width (mm)	16	35.5	22.09	21	18	4.53
Thickness (mm)	4	12	7.47	7.0	7.0	2.10
Weight (g)	1.4	27.3	5.93	4.5	6.6	4.95

Table 2. Unhafted biface measurements.

	Min.	Max.	Mean	Median	Mode	St. Dev.
Length (mm)	1.2	12.8	2.8	2.35	1.5	1.73
Width (mm)	0.6	4.1	1.86	1.8	1.8	0.65
Thickness (mm)	0.3	10.6	0.78	0.6	0.6	1.28
Weight (g)	0.3	120.6	5.99	3.0	1.3	15.23

a Thebes-like point dating to the Early Archaic period, around 8,000 years ago (Figure 3a). A total of 9 projectile points were found dating to the Middle Archaic period:

-2 Neville (Figure 3b-c);
-1 Stanly point (which may be a Perkiomen (Figure 3d);
- 6 Normanskill (Figure 3e-j).

The majority (64%) of the Ski Minne projectile points were from the Late Archaic period, dating from around 3500 to 1600 years ago:

- 9 Bare Island (Figure 4a-g);
- 4 Brewerton (Figure 4 h-k);
- 11 Lamoka (Figure 5);
- 2 Genesee (Figure 6 a-b);
- 1 Snook Kill (Figure 6c);
- 1 Perkiomen (which may be a Stanly) (Figure 6d)
- 2 Orient Fishtail (Figure 6e-f) projectile points

In contrast to the large percentage of points from the Middle and Late Archaic periods, only the possible Perkiomen and the Orient Fishtail points may date to the Early Woodland period. From the Middle and Late Woodland periods come 6 points:

- 2 Copena-like (Figure 7a-b);
- 1 Steuben (Figure 7c);
- 2 Jack's Reef (Figure 7d-e);
- 1 Levana (Figure 7f).

In the Ski Minne collection, along with the projectile points, were 75 flake tools (Table 3), of which 21% were scrapers, 16% were knives, and 4% were blades. The predominance of projectile points, scrapers and knives suggests that Ski Minne functioned as a site for hunting and butchering animals. In addition, the collection of lithic debitage totaled only 3,845 flakes, 529 of which were fragments without platforms, the rest having platforms to analyze (Table 4). The median weight of the proximal flakes was 0.4 g suggesting that the flakes found at Ski Minne were pressure flakes, resulting from the later stages of knapping. Ninety-four percent of the debitage was local chert, found in the Shawangunks. Three percent of the flakes were sandstone and one percent were quartzite. Although the majority of flakes were produced from locally available material, a few of the projectile points were made of non-local materials such as jasper and argillite. It is probable that the inhabitants of the site were bringing already manufactured tools with them on their journeys into and across the Shawangunks. Therefore, the flaking that occurred *in situ* was most likely the result of last minute retouching or the production of tools to replace those that were broken or lost.

In addition, a total of 44 hammerstones, bannerstones, smoothing stones and grinders were recovered from the site (Table 5). The large number of hammerstones would usually suggest a site of lithic manufacture. This contradiction can be explained assuming that many of the designated hammerstones were in fact used for other utilitarian purposes and functions. The average weight of the hammerstones was 415.9 g with a length of 8.14 cm and a width of 6.35 cm (Table 6). Hammerstones were chosen from locally available material, predominantly quartz and sandstone. A total of 43 cores were recovered from the site (Table 7). Flake scars on the cores, averaging 25 mm in length and 27 mm in width are comparable to the size of the debitage flakes, suggesting

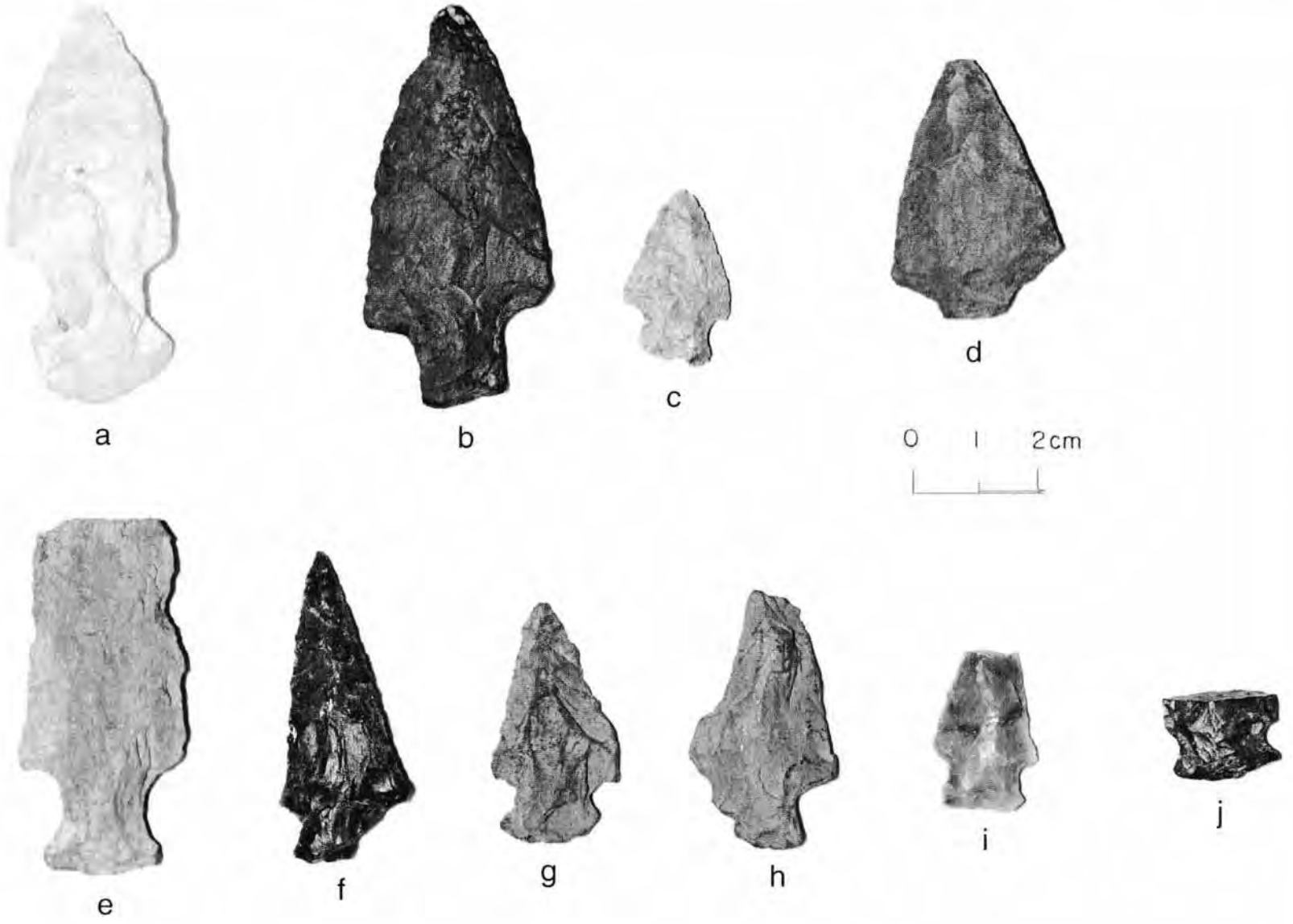

Figure 3. Early and Middle Archaic points. **a**. Thebes-like; **b-c**. Neville; **d**. Stanley (may be a Perkiomen); **e-j**. Normanskill.

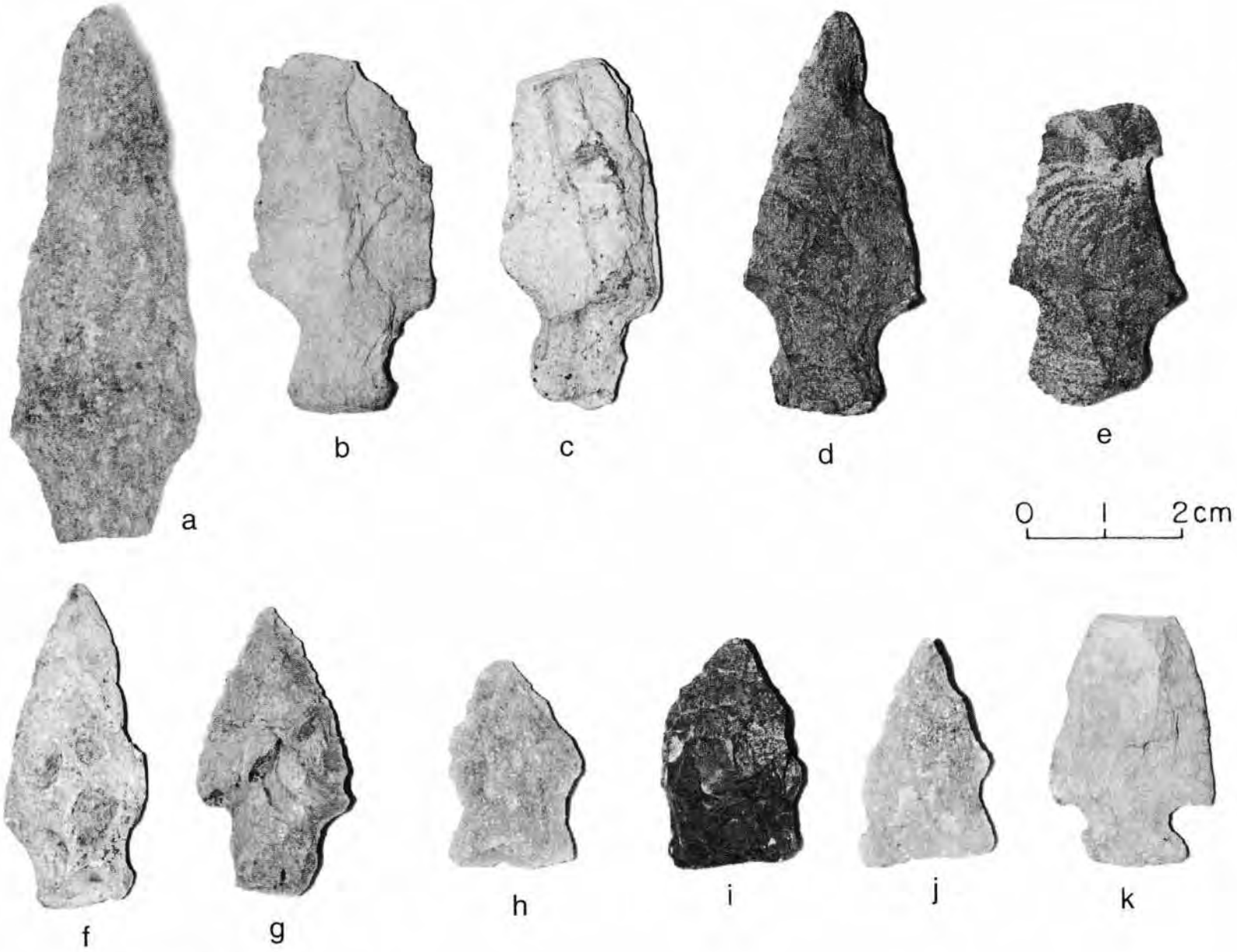

Figure 4. Late Archaic points. **a-g**. Bare Island; **h-k**. Brewerton.

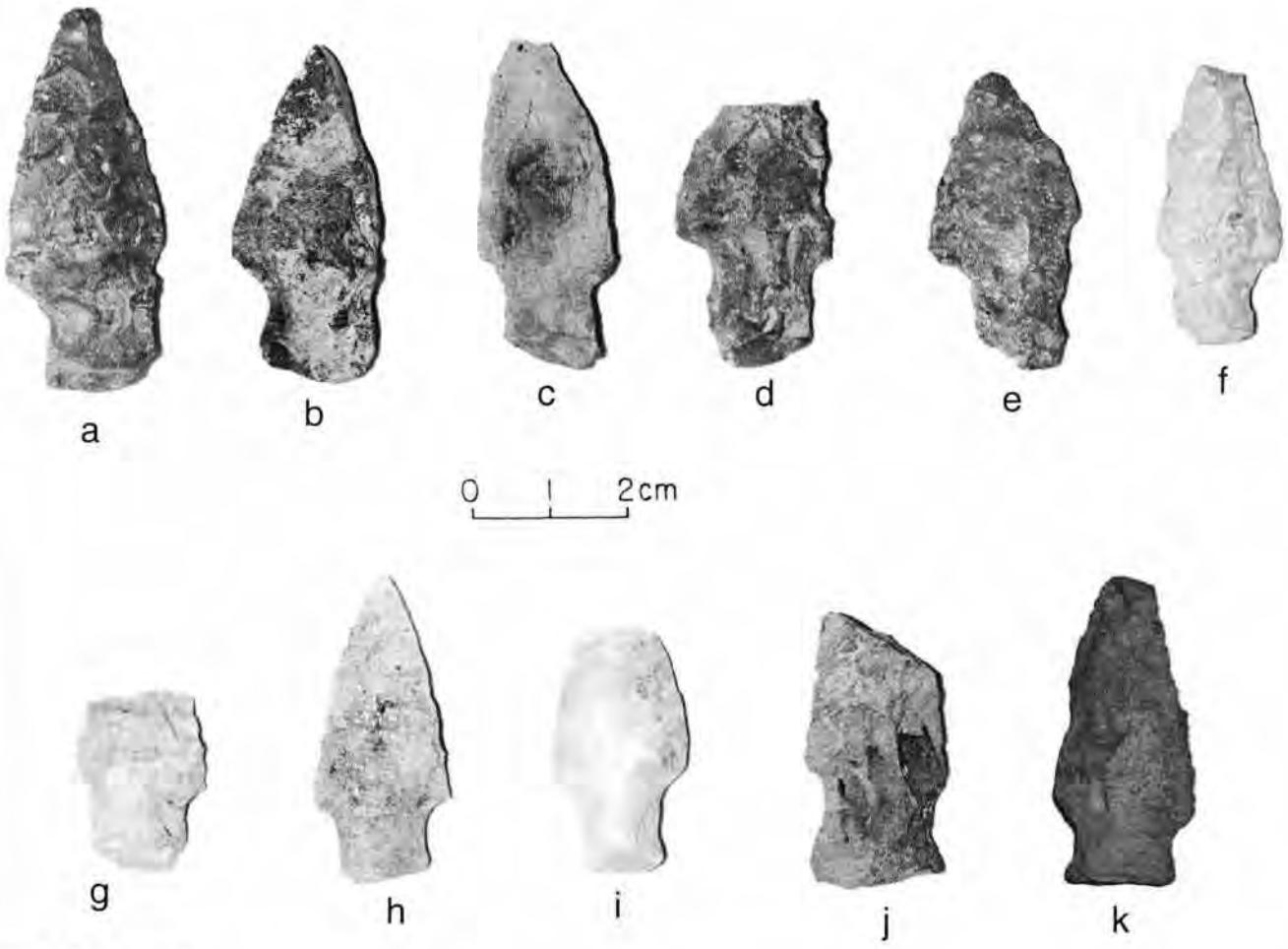

Figure 5. Lamoka points.

that many of the flake tools were produced at the site, while the majority of the projectile points were carried in from other locations.

The site of Ski Minne also produced 8 ceramic fragments, 6 of which were pipe fragments. Two of the ceramic fragments were potsherds, which are part of the same cord-pressed decorated pot. The limited number of ceramic remains accords with the low number of Late Woodland projectile points, and also with the identification of the shelter as a hunting camp.

In examining the artifact distribution at the site we found that the most heavily used section of the rockshelter was the 15 ft adjacent to the front opening of the shelter on the west site, sections -5/R5, 0R5, -5/0 and 0/0 (Figure 8, Figure 9a). These sections would have received the most winter sunlight while still remaining under the protection of the small overhang. It would have been in this main room that the inhabitants at Ski Minne butchered their game as well as sharpened stone tools. A few exceptions to this pattern are of interest. Historic (Figure 9b) and ceramic (Figure 9c) artifacts, though also found towards the front of the rockshelter, were more towards the east. Proximal flakes (Figure 9d), cores (Figure 9e) and hammerstones (Figure 9f), while concentrated in this area, were distributed throughout the excavated area, proximal flakes being found in all but two of the excavated units. Finally, the tools, hafted (Figure 9g) and unhafted (Figure 9h) bifaces and flake tools (Figure 9i) showed a broader distribution in the western part of the shelter. This might indicate that the northwestern section was used for sleeping. The limited space of the shelter would have slept one small hunting party or a larger party of up to around 10 people. The use of the back room as well as several overflow shelters in the nearby area might have provided protection for a larger group.

Comparison

The three analyzed shelters on the Shawangunk Ridge—Mohonk, Upper Trapps Gap and Ski Minne—present similarities and differences. In examining the projectile points by

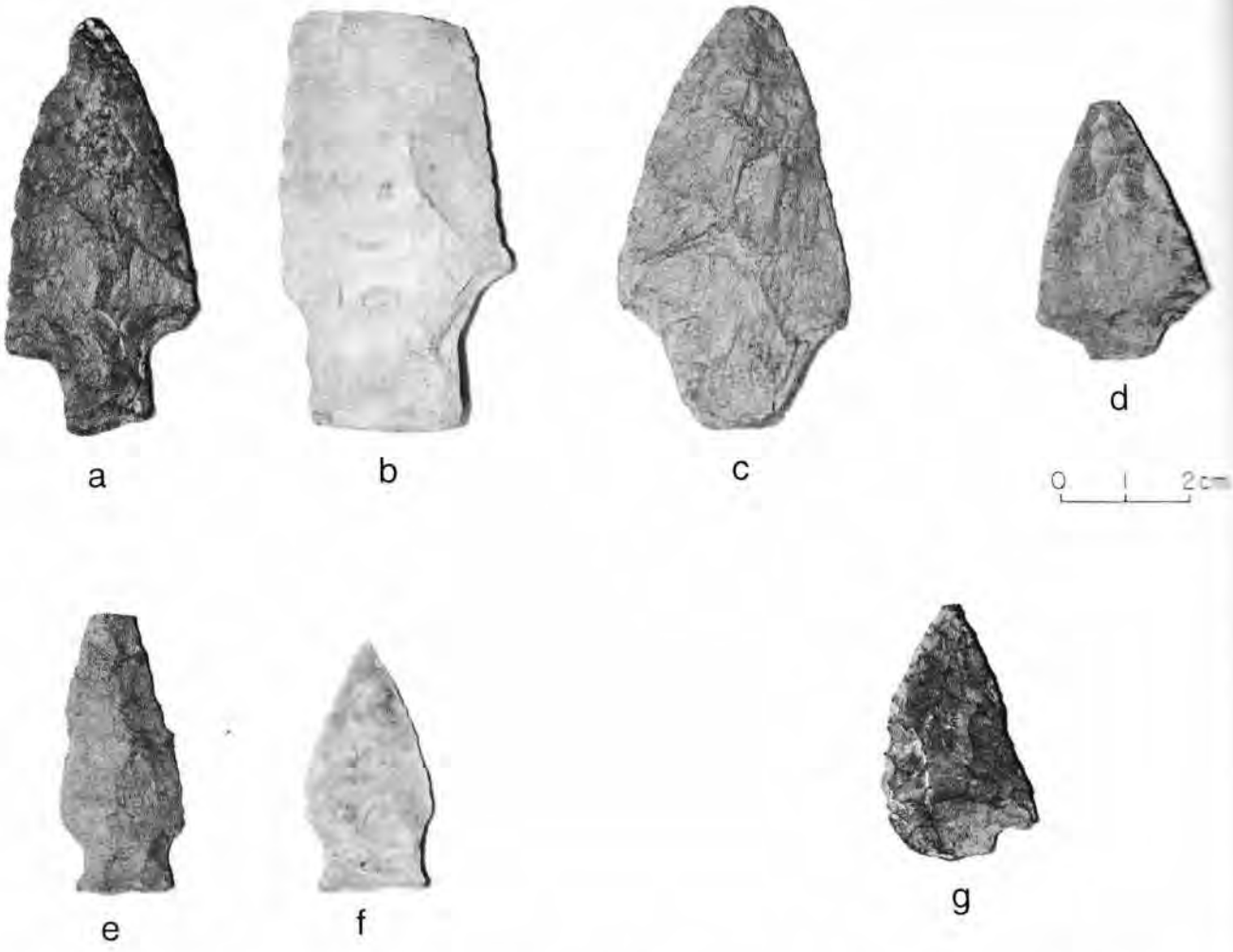

Figure 6. Terminal Archaic-Early Woodland points. **a-b**. Genesee; **c**. Snook Kill; **d**. Perkiomen (or Stanly); **e-f**. Orient Fishtail; **g**. Untyped Archaic.

period found in each of the three sites, there is a clear predominance of points ranging from the Middle Archaic to the Late Archaic period (Figure 10). At the sites of Ski Minne and Upper Trapps Gap, the major occupation occurred in the Late Archaic period. In contrast, Mohonk Rockshelter produced more artifacts corresponding to the Middle Archaic period. However, all three sites experience a dramatic decline in projectile points belonging to the Early Woodland period.

Although all three sites demonstrate contemporaneous usage during the Middle and Late Archaic periods, the site of Upper Trapps Gap (see Sando and Kaplan, this volume) produced considerably more pottery than did Ski Minne or Mohonk Rockshelters. Eisenberg found 130 potsherds at Mohonk Rockshelter, which he concluded were all from the same pot, and, as noted above, 2 small cojoining potsherds were found at Ski Minne. From Upper Trapps Gap, "less than 300 potsherds" were recovered by Schraebish's excavation and 83 from Vassar's, representing at least 21 vessels (Sando and Johnson 2008, this volume; Burdine 2007). Upper Trapps Gap, not unexpectedly, given its location at the top of one of the major passes across the Shawangunks, was probably a way station for families crossing the ridge as well as being a hunting camp. Thus it continued to be used as a travel stop in the Woodland period when none of the shelters were used as hunting camps.

At all three sites the ratio of debitage to projectile points is small, suggesting a usage of all three sites as shelters for hunters and locations for butchering and skinning game. At the site of Mohonk Rockshelter there were approximately 55 pieces of debitage for every projectile point. At Ski Minne the ratio was slightly higher with approximately 62 pieces of debitage for every projectile point. Clearly, at both sites, knapping was not the dominant activity. Mohonk Rockshelter was excavated to a depth of 43 in compared to the 22-in depth at Ski Minne. Furthermore the site of

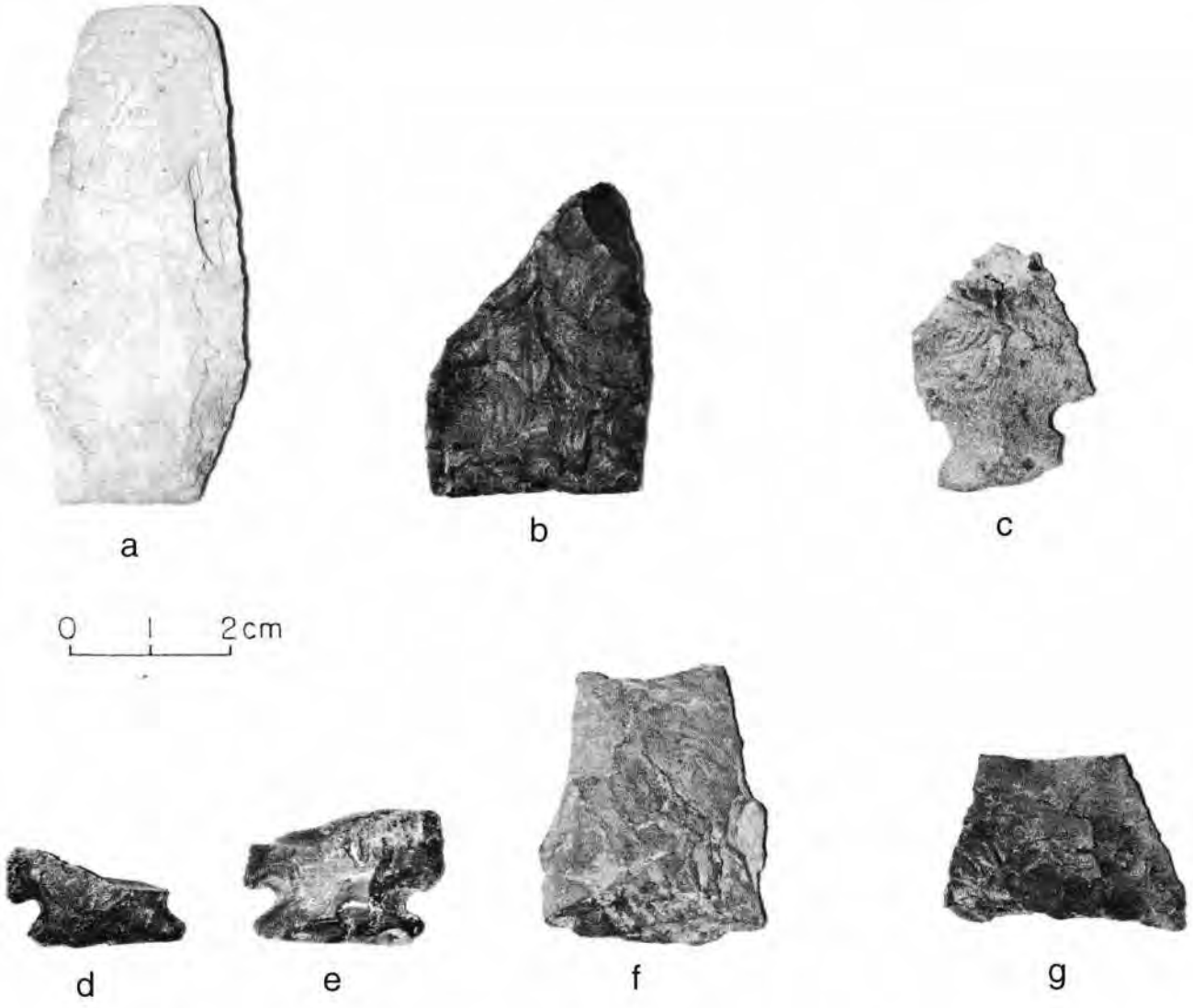

Figure 7. Middle to Late Woodland points. **a-b**. Copena-like; **c**. Steuben; **d-e**. Jacks Reef; **f**. Levanna.

Table 3. Flake Tools.

	Number	Percent
Utilized Flake	37	49%
Scraper	16	21%
Knife	12	16%
Blade	3	4%
Unidentified	2	3%
Denticulate	1	1%
Preform	1	1%
Shredder	1	1%
Slicing Knife	1	1%
Spokeshave	1	1%
Side-scraper	1	1%

Mohonk Rockshelter is approximately 68 ft in length compared to Ski Minne, which is around 21 ft in length. The amount of material recovered at Mohonk Rockshelter is therefore small in proportion to the size of the site. It can be assumed that Mohonk and Ski Minne Rockshelters were utilized for similar functions, but that Ski Minne could not hold as many occupants. It is difficult to compare Ski Minne to Upper Trapps Gap in a similar manner since the majority of the artifacts at Upper Trapps Gap were removed during Schrabisch's 1919 excavation and have not been relocated.

Discussion

The Ski Minne Rockshelter was occupied from possibly the Early Archaic period through to the Late Woodland period.

Table 4. Proximal Flakes platform measurements.

	Min	Max	Mean	Median	Mode	St. Dev.
Platform Length (mm)	0*	33	6.575	6.0	4.0	4.19
Platform Width (mm)	0*	48	2.23	2.0	1.0	1.85
Weight (g)	0.5	45.8	1.20	0.4	0.2	3.26

* point platforms

Table 5. Ground stone tools.

	Number	Percent
Hammerstone	36	82%
Smoothing Stone	2	5%
Bannerstone	2	5%
Grinder	1	2%
Hearthstone	1	2%
Manuport	1	2%
Wedge	1	2%

with the most intense occupation occurring during the Middle and Late Archaic periods, as is true of the other ridge sites analyzed. The drop in occupation in the early Woodland period is most likely due to a cultural and environmental shift as people began to establish more permanent agricultural settlements in the valleys (George 1994). During the Woodland period, Native American farmers who cleared fields and ground for villages on the valley floor created edge habitats which may have led deer, and thus hunters, to stay in the valley bottoms during the winter rather than migrating to the high mountains. As game became more prevalent in the valleys year round, there was a less need to use the ridge rockshelters, and people only crossed the ridge to get to the other side.

The Early Woodland period occupation in New York State is characterized by the Meadowood phase, which is rarely found in archaeological collections throughout the Hudson Valley. Robert Funk suggested that this might be a result of heavy occupation of the Valley during the Colonial period and into the present (Funk 1976). As European immigrants began to till the soil and build settlements, many of the villages of the prehistoric farmers were destroyed. Most of the Woodland sites were most likely in locations conducive to agriculture, and, therefore, the same sites were chosen as locations of Dutch and English settlements during the early colonial period and beyond.

During the Middle and Late Archaic periods, however, it is clear that occupation of the ridge was a regular part of life. Data collected from CRM surveys along interstate I-88 support the hypothesis that deer were a major winter resource. During the winter months (December–March), deer provided, on average, 96% of the resource contribution. The spring and summer months (April–September) showed a dominance of fruit, nuts and tubers as the main resources (Versaggi 1996). Thus, evidence of hunting and butchering implements and minimal debitage at Ski Minne suggest a winter occupation by groups who brought their finished tools with them.

The congruence in size between flake scars present on the cores and flake tools suggests that flake tools may have been produced *in situ* at Ski Minne, while projectile points, requiring more precision, were brought in for the purpose of hunting. The small amount of lithic debitage from the site may, therefore, reflect the production of flake tools, such as scrapers and knives. That projectile points were pre-made is further confirmed by the presence of jasper and argillite points, materials that cannot be found in local rock outcrops. For example, jasper is predominantly found in Pennsylvania, suggesting that some of the people using the ridge, and the Ski Minne Rockshelter, were traveling to and/or from the south and the east.

Dating the site of Ski Minne is difficult, especially when the most accurate determiner of date is the projectile point. As is clear in the differences between dates used in Eisenberg (1991), Ritchie (1971), and Justice (1987), it is impossible to determine an exact date without radiocarbon dating, or even with it! For example, Brewerton points are classified into both the Middle and Late Archaic periods, as are Genesee points (Ritchie 1971; Justice 1987). Orient Fishtail points and Perkiomen points are placed from the Late Archaic to the Early Woodland. This may be due either to imprecision in dating or to a fluid transition in point styles over time, which is poorly matched by our typologies.

Of the projectile points recovered from Ski Minne, only one, the Thebes-like point, dates to the Early Archaic period, suggesting a minor, possibly exploratory occupation. The occupation was more pronounced in the Middle Archaic period, with 9 projectile points having been found. However, only 2 Neville points were found in contrast to the 55 at the Mohonk Rockshelter. Mohonk is in a more protected location and conditions further up the ridge might not have been conducive to a major occupation during Neville times. The Late Archaic period saw the major occupation of Ski Minne, with 29 points having been recovered.

Table 6. Hammerstone measurements.

	Min.	Max.	Mean	Median	Mode	St. Dev.
Length (cm)	3.8	28.4	8.14	6.9	6.7	4.13
Width (cm)	2.7	14.7	6.35	5.75	5.5	2.71
Thickness (cm)	1.6	8.45	4.25	4.02	3.8	1.57
Weight (g)	28	2937	415.9	213.5	Na	561.93

Table 7. Core measurements.

	Min.	Max.	Mean	Median	Mode	St. Dev.
Length (cm)	2.85	13.3	4.83	4.1	2.4	2.45
Width (cm)	2.75	11.6	3.48	2.75	2.1	2.15
Thickness (cm)	4	12	2.52	1.7	1.1	2.17
Weight (g)	2.5	1215.3	108.96	20.8	3.7	279.98

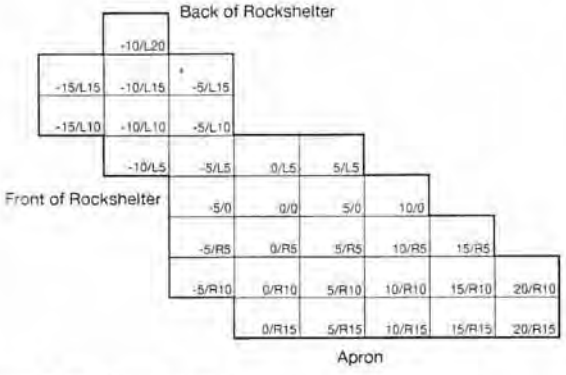

Figure 8. Ski Minne Site Grid.

A moderate number of proximal flakes were found at the Ski Minne Site, which might suggest that much tool making took place *in situ*. The concurrent excavation of 45 cores and 44 hammerstones also suggests that there was a considerable amount of knapping occurring at Ski Minne. However, the analysis of the proximal flakes showed that they are consistent with flakes that would have come from the last stages of a core or off the final reductions of a bifacial tool. The lack of cortex also confirms that only latter stages of reduction occurred at the site. This evidence further confirms Ski Minne's identity as a hunting site where hunters refined points and made *ad hoc* tools for butchering.

Within the excavated site, the immediate opening of the shelter shows the most frequent use, and therefore, the largest collection of artifacts. This is most likely due to its position at the mouth of the shelter where sunlight was prevalent, but an overhang would have kept the ground relatively dry. The southeastern exposure of the shelter allowed for the strong afternoon sun to warm the site. The northern winds would have hit the back of the shelter, not affecting the inhabitants inside. It is from this section, 0/R5 (see Figure 8) that 1,502 of the proximal flakes were found.

The large number of proximal flakes located in one section is puzzling. It is possible that one or two flake tools or proximal flakes were completely worked at the site. One projectile point alone might produce upwards of 1,000 flakes. Clearly, manual labor and technological processes needed a large amount of light as well as protection from the elements. Ski Minne would have been a safe location to butcher game as well as repair and manufacture the tools needed for hunting and butchering.

Conclusion

The position of the Ski Minne Site, along a well-trodden public climbing trail, invites destruction to the rockshelter. This detailed documentation of the artifacts found at Ski Minne presents great potential for future research, which is essential. Further research should include a study of the cores and hammerstones from the site to determine the discrepancy between their large number and weight and the smaller percentage of flakes and their low cortex ratios. Information on the multiple uses of the hammerstones will help to clarify other possible usages of the site. Furthermore, a more detailed study of the potsherds from all three sites might be able to place the Ski Minne Site within a particular Woodland culture, as well as to allow a comparison of the prehistoric people living in the three rockshelters in the region. The sudden drop in population of the ridge during the Early Woodland period should be explored in greater depth to determine whether this was due to sudden ecological changes. In addition, the excavation of more ridge rock-

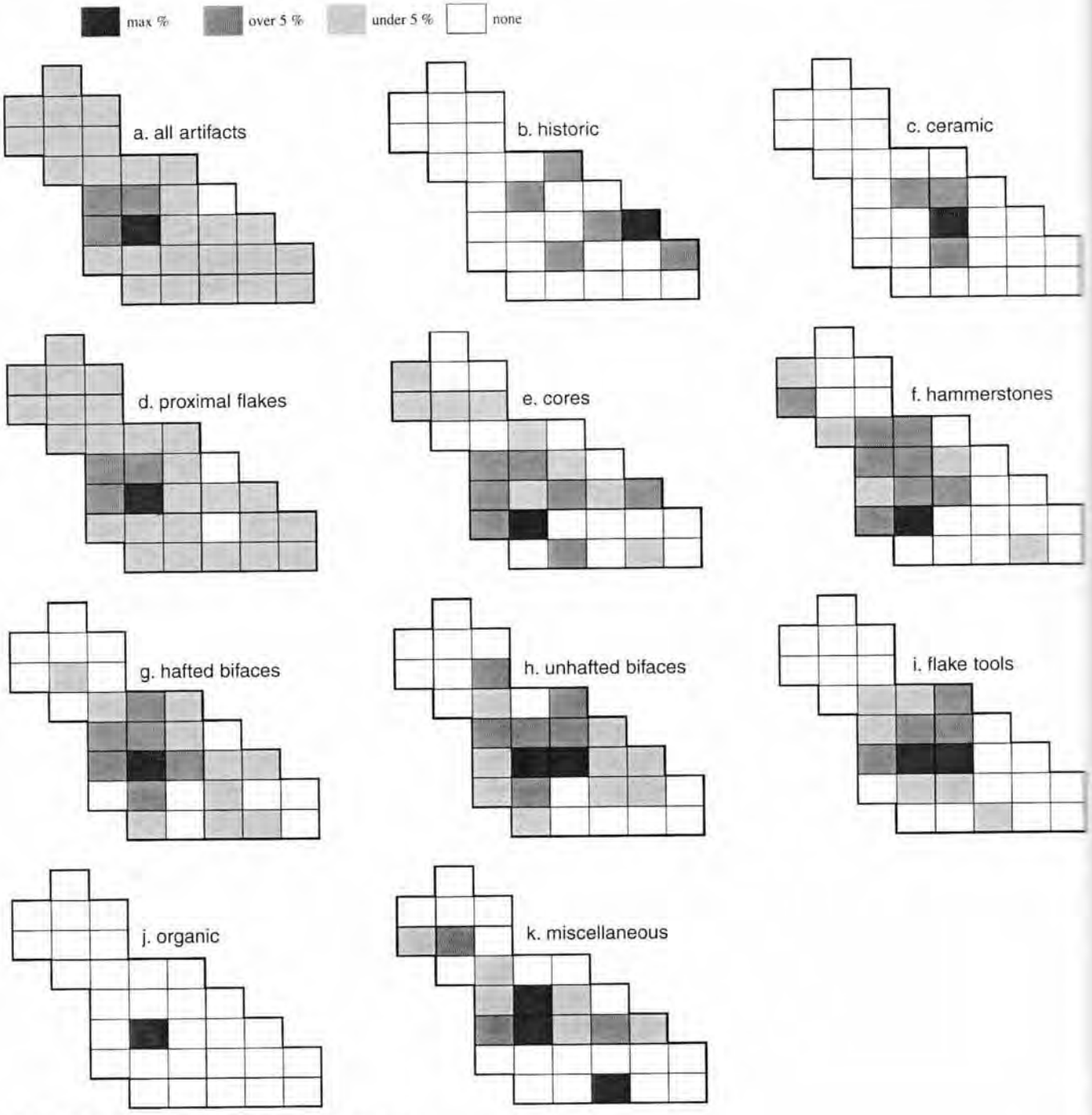

Figure 9. Distribution of artifact types at Ski Minne Site.

shelters may show that the population did not diminish in the Early Woodland period, but that inhabitants used the Shawangunks differently.

The site of Ski Minne helps in understanding movement patterns and site usage by prehistoric populations, not only in the Shawangunk Mountains, but also in the Northeast in general. The site supports the existing hypotheses that rock-shelters were used as temporary residences in the ridges for inhabitants en route across the mountains or for hunters using sites as shelters during hunting trips when following the fauna into the ridges. Accordingly, Ski Minne was occupied during the fall/winter months as the valleys began to be inhospitable with the snow and the animals migrating up into the mountains. Not only does the site of Ski Minne confirm these existing hypotheses, but it also places the Shawangunk ridge into a pre-historic context, aligning the

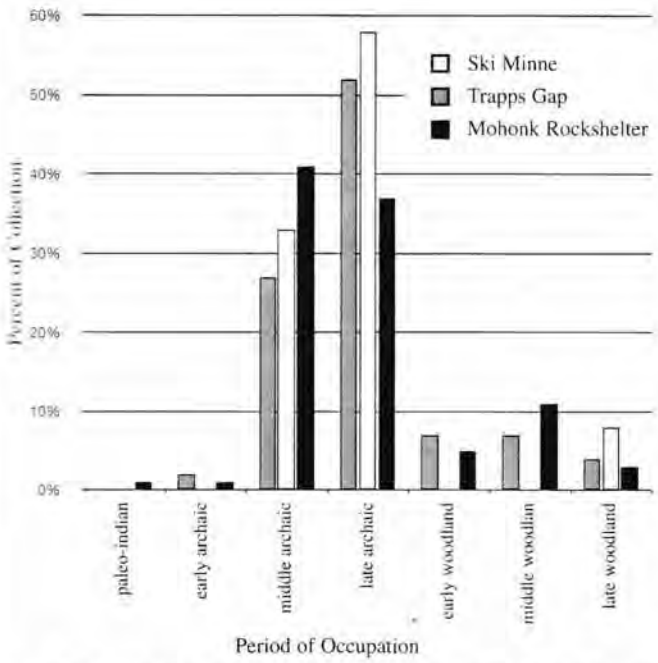

Figure 10. Graph of projectile points by site: Ski Minne Site; Upper Trapps Gap Site; Mohonk Rockshelter Site.

sites of Mohonk Rockshelter and the Upper Trapps Gap Rockshelter into a unified prehistoric picture. All three sites were occupied contemporaneously in the Middle and Late Archaic periods, which, with further exploration, may help to elucidate the environmental conditions of the time or the search for game. Further excavations of the Ski Minne Site and other rockshelters in the Shawangunks should continue to expand our knowledge of the prehistoric peoples of the Northeast.

Acknowledgements

The Daniel Smiley Research Center at the Mohonk Preserve provided access to the Ski Minne collection, which is stored there. Particular thanks are due to Paul Huth and John Thompson for their assistance. Vassar Undergraduate Summer Research Institute students Gerald Gilligan and Laurel Walker helped with the recording of the artifacts. Dr. Sara Gonzalez photographed the projectile points.

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Re-analysis of the Rowley Road Site, a Late Archaic Lithic Reduction Center in Western New York

Douglas J. Perrelli, Hans Harmsen, Kyle Somerville, and Antonio Sudina, Department of Anthropology, University at Buffalo, New York

The Rowley Road Site (UB 2806; NYSM 10266) is a lithic reduction center located southeast of Buffalo, New York. A large amount of lithic material consisting of debitage, tools, and cores were recovered during Cultural Resource Management investigations at the site in 1996. Intrasite comparisons of the lithic assemblage reveals the type and nature of lithic tool production, which in turn enables the identification of differences in lithic reduction strategies, and ultimately, social organization. This paper considers how these comparisons provide evidence for variations in spatial activities and can be indicative of the temporal period of occupation of a site, and its probable use by prehistoric peoples living in western New York State.

Introduction

The systematic study of lithic debitage is one component of analysis that provides key insight into the reconstruction of lithic technology and patterns of prehistoric human behavior (Fish 1981). Historically, however, typological strategies of debitage analysis have generally relied on individual study at the artifact level to determine the technological origins of core reduction and formal tool production. This approach has often contributed to the adoption of single-dimensional categories linked to assumptions of technological origin, and consequently has addressed only narrow portions of variability within the spectrum of debitage assemblages (e.g., Jeter 1980; Klie et. al. 1982; Stafford 1980). However, the identification and grouping of metric and typological morphologies into observable patterns enables greater inferences into socio-technological organization of past groups. In this process the entirety of the recovered material is organized into interpretation-free and mutually exclusive debitage categories and stage reduction. Such an approach has been demonstrated as an effective tool in studying technical variation (Byrd 1981) in the American Southwest, as well as reflecting complex functional, occupational, temporal, and organizational factors contributing to prehistoric debitage assemblage variation.

This paper will apply Sullivan and Rosen's (1985) interpretation-free analysis of debitage morphology and Callahan's (1979) stage reduction sequence to identify patterns in prehistoric lithic traditions through a study of the recovered debitage from the Rowley Road Site (UB 2806; NYSM 10266) in western New York State (Hartner and Perrelli 1996). Several conclusions are offered to show variability in prehistoric socio-technical organization at the site level.

Analysis of chipped stone material is conducted under the assumption that tools and debris, regardless of cultural affiliation, are products of some form of an organized lithic technology (Nelson 1991). In this regard, the production, utilization, and eventual deposition of the lithic material at the Rowley Road Site provides an excellent case study to demonstrate that the material record is reflective of problem-solving strategies within both a physical environment and a social context (Amick and Carr 1996; Binford 1979; Nelson 1991). Studies of this type demonstrate that particular technological alternatives are often specific to situational contexts, and that the range of raw material exploitation reflects variations in formal and informal tool kits by different communities over time. Individual mobility, raw material resource availability, curation, expediency, and opportunism can be thought of as a broad spectrum of behavioral accommodations to social and environmental constraints, resulting in technological innovation on the part of prehistoric actors.

The Rowley Road Site

The Rowley Road Site (UB 2806, NYSM 10266) is located near the Town of Cheektowaga, southeast of Buffalo, Erie County, New York (Figure 1). The site was excavated May-June 1996 prior to construction on the Rowley Road Bridge that crosses Cayuga Creek (Hartner and Perrelli 1996; Figure 2). Geographically, the Rowley Road Site is located on the Lake Erie Plain, which extends south to meet the highlands of the Allegheny Plateau. Elevation within the area of the site averages approximately 620-630 ft AMSL. Relief within the region is relatively low with 0-3% slope, although some areas may reach as high as 8% (Hartner and Perrelli 1996:6). The site is located in a suburban area, which was formerly utilized as farmland. Although some disturbance, likely from plowing, resulted in the mixing of

prehistoric and historic artifacts, the site appears to have escaped major disturbance from cultivation and the later construction of nearby houses.

The site is situated on the eastern bank of Cayuga Creek, which forms part of the drainage system for Lake Erie, located to the west. The creek has substantial banks, sloping to approximately 2 m (6 ft) above the creek. The banks then level off and become generally flat within the boundaries of the project area. Rowley Road bisects the site into north and south portions. As defined by the project boundaries, the site is relatively small: site limits north of Rowley Road begin approximately 5 m (16 ft) east of the creek and extend approximately 45 m (150 ft) further east.

Figure 1. Location of the Rowley Road Site in western New York State (After Hartner and Perrelli 1996).

Site width north of Rowley Road ranges from 2 m-8 m (6.5-26 ft). South of the road, the site boundaries begin 10 m (33 ft) east of the creek and extend only 5-10 m (16-33 ft) further east (Hartner and Perrelli 1996:15). However, this is largely an artificial designation as these were the boundaries of the original "Area of Potential Effect". As such, it is possible that the dimensions of the site are much larger than outlined above.

The site is located in an area that has abundant raw material for the production of stone tools. Prehistoric people would likely have exploited the abundance of naturally occurring lithic raw material along Cayuga Creek, as well as in boulders scattered throughout the creek. The site appears to have had various occupations spanning the Archaic through the Late Woodland period based on diagnostic projectile points, including both Brewerton and Levanna types, found within the area. However, the site itself likely had a larger Archaic component due to a change in settlement patterns during the Late Woodland period in which people moved their villages away from major waterways (Hasenstab 2007:170).

Field Methodology

Phase II excavations at Rowley Road utilized three different methods for subsurface testing: 1) shovel testing, 2) augering, and 3) test units. A total of seven, 1 x 1 m (3.3 x 3.3 ft) test units were placed on the east side of Cayuga Creek (Figure 3). Units Six, Seven, Four, Three, and Five were placed east to west, respectively, on the north side of Rowley Road. Units One and Two were placed on the south side of Rowley Road, also east/west. All soils were screened through 6 mm mesh. The lithic material recovered from the

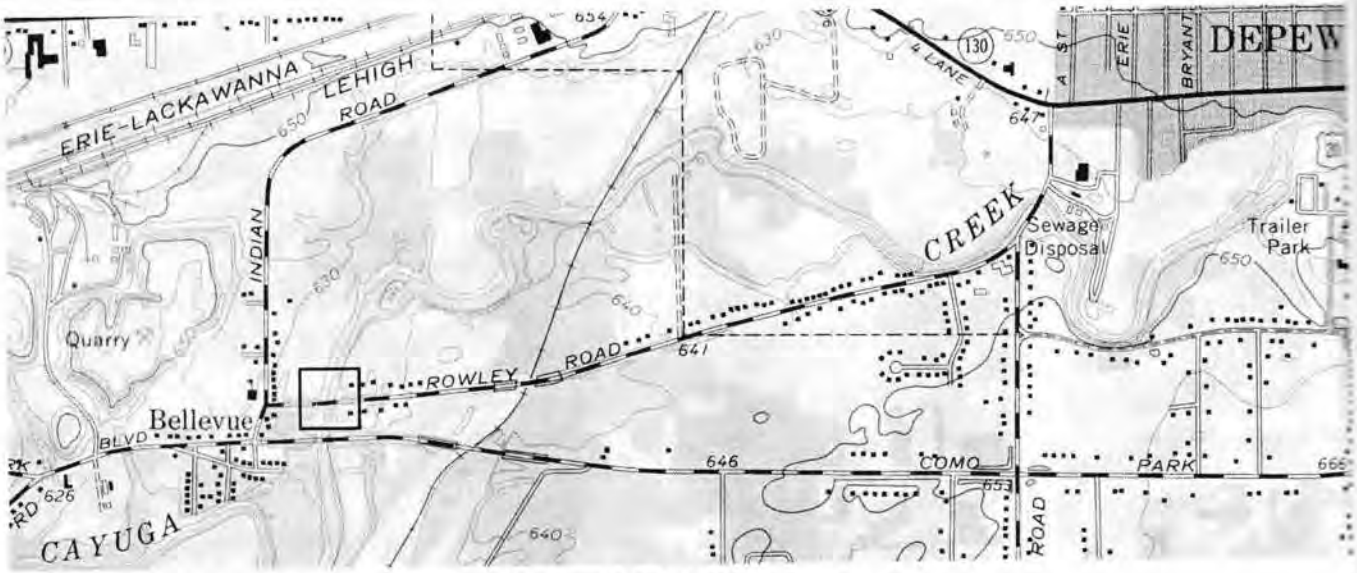

Figure 2. Location of Rowley Road Site on the 1948 USGS Depew, N.Y. 7.5' Quadrangle.

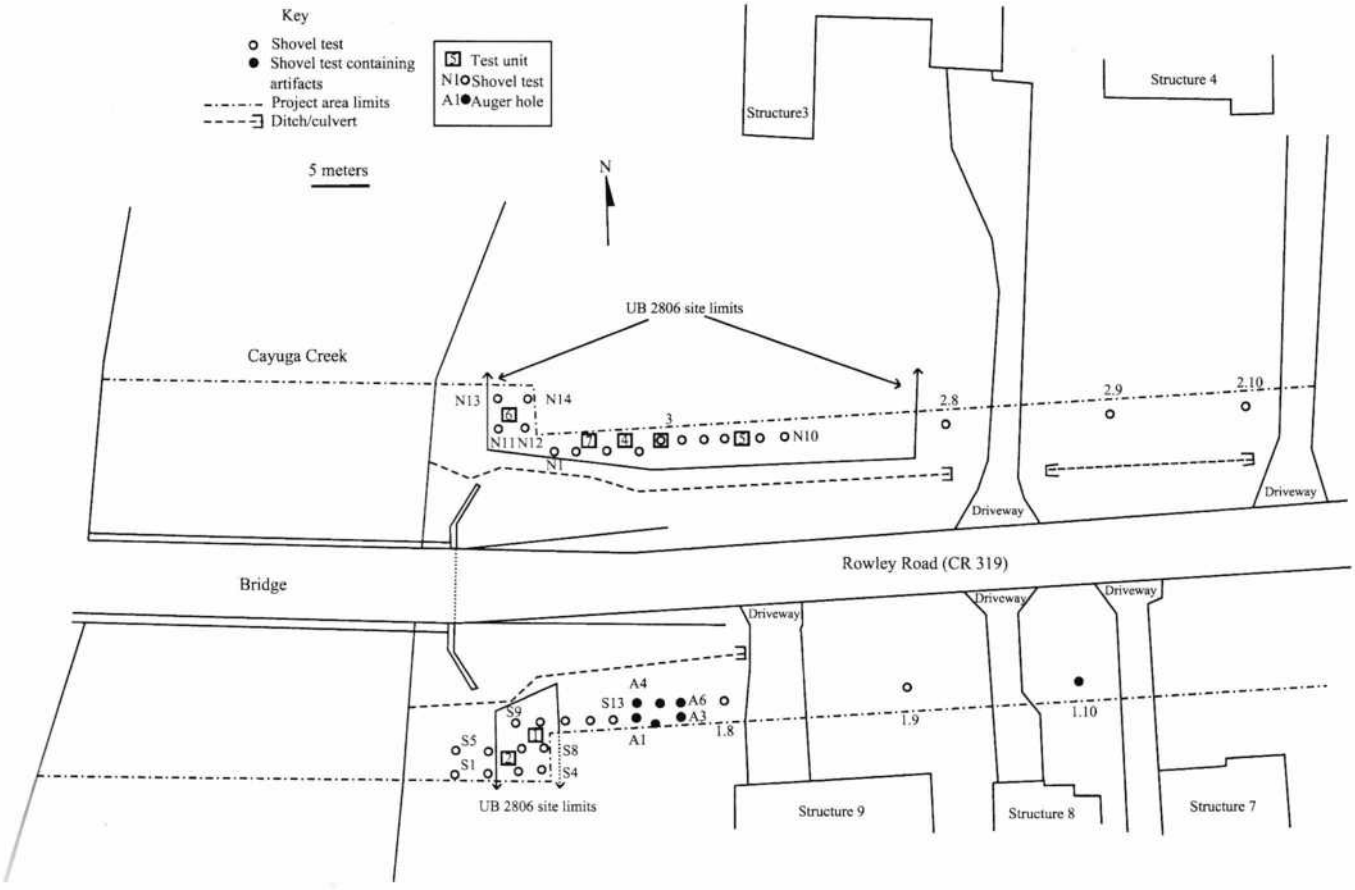

Figure 3. Phase II project area map with excavated test units.

Table 1. Prehistoric artifacts by Phase II test unit, all soil horizons. For flake size, Macro >1", Large <1", Small <½" but > ¼", Micro < ¼" (After Hartner and Perrelli 1996).

	Debitage Type					Flake Tools			Utilized Cobbles	Charcoal
Test Unit	Macro	Large	Small	Micro	Blocky	Retouched	Utilized	Bifacial Preform	Hammer-stone	
1		15	87	43	2	2	3			Present
2		4	1							
3	27	350	764	123	2	3	1	4		
4	1	40	172	25	1	2	4	3	1	Present
5	1	3	2							Present
6		3	6							
7	3	33	61	10	1			1	1	
Total	32	448	1093	201	6	7	8	8	2	

test units was recorded from two different levels that followed the natural stratigraphy of the soil. Excavation within the test units ceased when totally sterile subsoil passed through the screen. A total of 1805 lithic materials were recovered from Rowley Road (Table 1). The majority of these were recovered from the Ap horizon approximately 40 cm bd (16 in bd). Some artifacts were recovered from the A/B and B-horizons, but this is likely due to bioturbation processes. These materials are broken down into the following artifact type and counts: 1780 flakes, 15 chipped

stone tools, 8 bifacial pre-forms, and 2 hammerstones. The vast majority of the total lithic assemblage was recovered from Unit Three, the examination of which forms the basis for the remarks in this paper.

Analytical Methods

The intrasite comparisons used for this study are based on a number of typological and attribute analyses of tools, cores, and debitage recovered from the site. A multi-variable, intuitive description of flake morphology is presented to differentiate between tools and debris that may be representative of varying techniques and reduction stages—such as bifacial reduction versus amorphous core reduction. Cluster analysis was employed to determine flake categories through intuitive segregation of identifiable morphological traits. This method was used in an effort to identify subtle variation in technological strategies and tool kits as they relate to sites and features.

Lithic Data and Definitions

The chipped stone material recovered at the Rowley Road Site is divided into three general categories: 1) formal tools, 2) stone cores and 3) debitage. Formal tools refer to those artifacts shaped by repeated flaking through percussion via hard hammer stone or pressure flaking via soft-hammer materials (e.g., antler or bone). Tool shape and/or form provides key insight into function, and has directed the comparative study of the typological and attribute analysis between identified formal tools recovered from the site (Andrefsky 1998:136). Here, amorphous stone cores are defined simply as the sources of raw material used in tool production that were not used multi-functionally as formal tools and are sorted through a morphological comparison, but not ranked within a sequence of stage reduction as has been done with formal tools and bifacial preforms (which themselves may have served as both cores or early to middle stage formal tools) (Andrefsky (1998:75, 137). Debitage refers to all forms of chipped stone debris not identified as formal tools or stone cores. Cluster analysis is employed to determine the possibility that flake types specific to different reduction techniques can be identified through the use of statistical sequencing capable of identifying relevant variables.

The lithic materials were first sorted according to chert type, of which there are five separate varieties: Onondaga, Lockport, Seneca, Reynales, and Edgecliff. All three lithic material categories appear to be dominated by Seneca and Lockport cherts, which are readily procured from Cayuga Creek. Onondaga, Edgecliff and Reynales are equally less common among the assemblage, indicating that these particular types may have been brought into the site from elsewhere. The relative paucity of these other cherts in comparison to Seneca and Lockport also suggests that tools of these types were utilized differently than Lockport and Seneca types. Furthermore, discrete clusters of different chert types are also present within the site, with a single chert type present or one chert type dominating a smaller collection of other types. This is best seen in Unit Three, where each chert type has at least one discrete cluster within the assemblage. This may further indicate differences in utilization of the chert type and awareness on the part of the knappers of the physical attributes of each chert type.

Furthermore, cortical surfaces identified from Unit Three appear to be from tabular chunks of chert rather than from stream pebbles and cobbles, a factor that would contradict the assumption that the occupants were obtaining the resources from the creek bed. While tabular, naturally occurring chert resources may have been available from the Cayuga Creek drainage, another possibility exists that raw chert was being transported to the site from other quarries in the adjacent region. As Wenzel and Shelley (2001:108) have noted, while this factor may be self-evident, greater understanding of the patterning of chert types used in both formal and expedient made tools may give some insight into the migration patterns and technological organization of mobile forager communities.

Analysis of the artifact assemblages from Units Three, Four, Five, and Seven on the north side of Rowley Road reveals a distinct pattern of deposition. Moving east from Cayuga Creek, the amount of lithic materials steadily increases from 110 total artifacts in Unit Seven, to 245 in Unit Four to 1062 in Unit Three. Although these units had similar qualitative characteristics in regards to chert and flake types, based on the amount of lithic debitage present, Unit Three appears to be the center of lithic reduction at the site. In contrast, analysis of the units on the south side of Rowley Road produces a somewhat different pattern. The artifacts recovered from these units were almost all of Onondaga chert, and contained the largest concentration of the retouched artifacts recovered from the site. This suggests that the south side of the road was the center of a different type of activity than the north side. This is further revealed by the fact that all bifacial pre-forms recovered from the site were from the north side of Rowley Road, further indicating that bifacial reduction was the primary activity conducted on the north side.

Flake Attributes

Flakes were sorted using wire mesh screens, with the debitage subdivided into four class sizes: macro, large,

small, and micro, following from largest to smallest. Micro flakes are defined as those flakes that pass through 6 mm (¼ in) wire mesh screen, small flakes are trapped by 6 mm mesh but pass through 12 mm (½ in) mesh, large flakes are trapped by 12 mm mesh but pass through 24 mm (1 in) mesh, and lastly, macro flakes are trapped by 24 mm (1 in) screen. Flake attributes recorded for all flakes and flake fragments include: site number, catalogue number, test unit, class size and flake fragment type (Sullivan and Rosen 1985).

Sullivan and Rosen (1985:758-759) consider the following dimensions of variability to characterize individual chert flakes: 1) the presence of a single identifiable interior, flaked or ventral surface, 2) the presence of an intact point of applied force or striking platform, and 3) intact flake margins or edges. A complete whole flake (W) is defined as one that displays all of the criteria that includes an intact striking platform and a single interior surface (with a clear dorsal/ventral flake morphology). A flake with an identifiable striking platform but possessing breakage or edge damage is identified summarily as a broken flake (F5). Flakes with a single interior or ventral surface (and a clear dorsal/ventral morphology) but lacking a striking platform are identified as flake fragments (F4). Debitage lacking a clear interior or ventral surface, and therefore a discernable dorsal/ventral morphology are defined as blocky flake and core fragments (F2). The technological relevance of this approach and the objective nature of the criteria have been criticized as unproductive and wrought with generalized problems of uniform interpretation (Amick and Mauldin 1989, Ensor and Roemer 1989). However, this methodology provides a useful means for interpreting distinctive assemblages due to its broad degree of replicable descriptive segregation of morphological traits for use in making general inferences regarding the techno-functional origins of lithic material.

Flake size and artifact distribution patterning

The continuity of proposed bifacial core reduction and early stage tool manufacture at the site is given further credence through a random sampling of Test Unit Three. Using Sullivan and Rosen's (1985) morphological categories for debitage categorization, a number of interesting patterns emerge which indicate that the prehistoric actors at Rowley Road were engaged in both early and late stage biface reduction and/or formal tool manufacture. Sullivan and Rosen (1985:762) contend that the whole and non-orientable flake fragments are representative of core reduction, evidence of which is clearly demonstrated in Figure 4.

In addition, they also argue (Sullivan and Rosen

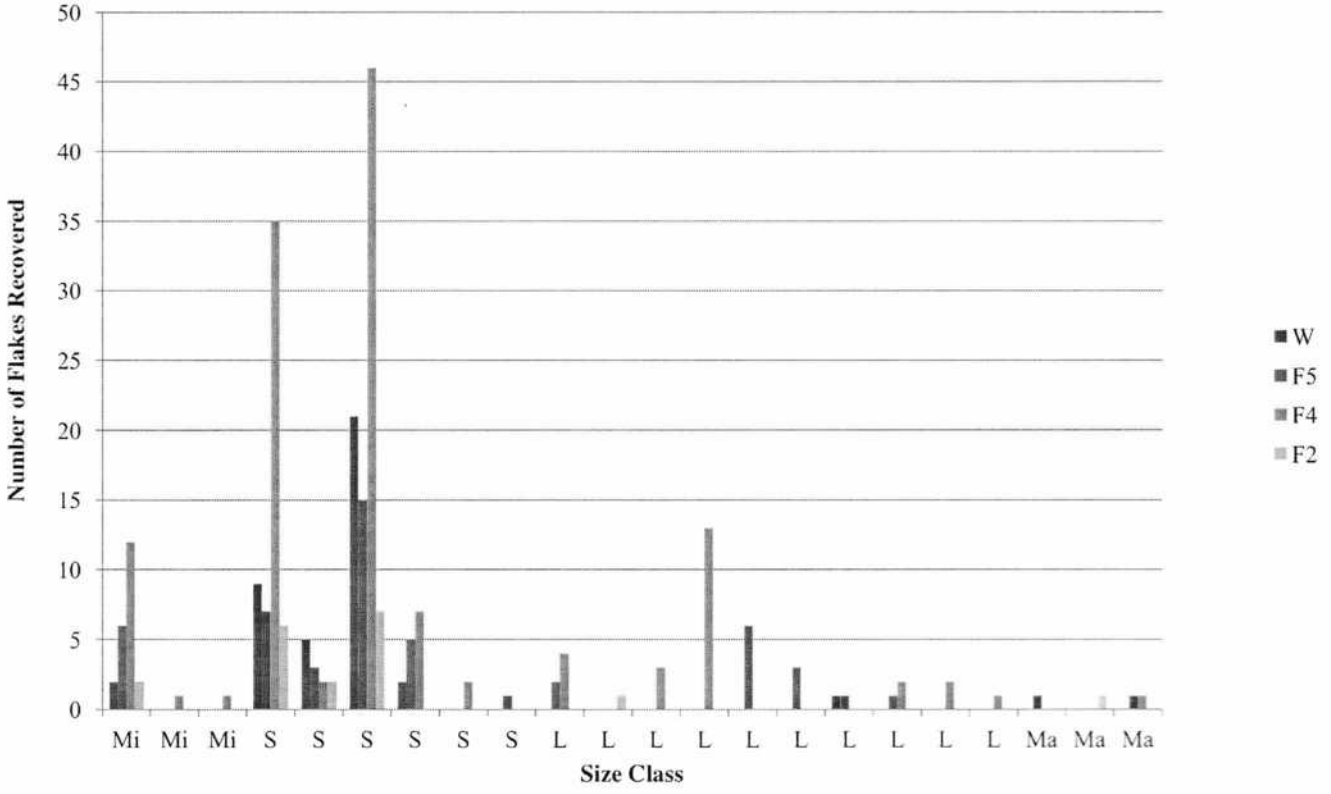

Figure 4. Comparative measure of recovered flakes differentiated by size class from Test Unit 3, all soil horizons. For flake size, Macro >1", Large <1", Small <½" but > ¼", Micro < ¼".

1985:769) that tool production is likely indicated by high numbers of proximal flakes and medial/distal broken fragments resulting from "mechanical failure of very thin flakes which separate into several pieces during biface or tool manufacture" (see also Hester et. al. 1977; Speth 1974). Our analysis found that Whole and Broken Flakes, those with intact striking platforms/bulbs of percussion, dominate the flake types at Rowley Road. These flakes appear to be characteristic of those produced during early-to-mid stage soft hammer bifacial reduction. Flakes produced from this manner of reduction tend to be wedge-shaped, have striking platforms with exterior angles measuring between 45-70 degrees, and have a characteristic "lip" produced by an antler or wooden billet. Furthermore, there is comparatively little shatter among the assemblage, although the reasons for this are uncertain. In addition, cortical and non-cortical flakes are both present among the assemblage. Cortex is prevalent among Whole and Broken flakes, indicating early and intermediate stages of bifacial reduction. Furthermore, micro flakes—which represent roughly 10% of the collected material at the site, have been interpreted as representative debitage of mid to late stage formal tool production through soft hammer pressure flaking (Neuman and Johnson 1979).

Formal Tools

In our classification of formal tools recovered from the Rowley Road Site, only six retouched artifacts and nine utilized flakes were identified. Formal tools collected are listed by type, test unit/soil horizon, weight, size, number of edges used, and a generalized description (Table 2). In addition, eight bifacial preforms were excavated at varying stages of manufacture. Bifacial tools/preforms are classified according to the staged production sequence as outlined in Table 3. For our purposes of classification, bifacial preforms are treated as both cores and tools. Attribute assessments include: chert type, test unit/soil horizon, weight, bifacial reduction stage, and whether the preform was whole or fragmented (Table 4).

The Stage vs. Continuum Debate

Jochim (1989) has observed that many lithic analyses emphasize stages of lithic production in studies of technological organization. However, some researchers have argued this model is problematic because it presupposes that such stages existed as a tangible linear process of ranked reduction in the minds of prehistoric toolmakers. Hoping to shift emphasis away from this perspective, Carr and Bradbury (1999) have emphasized that tool production should be conceptualized as a continuum rather than a staged process. These divergent views continue to spur debate in contemporary lithic studies and research on technological organization (Andrefsky 1998; Sullivan and Rosen

Table 2. Summary of chipped stone tools (After Hartner and Perrelli 1996).

Chert Type	Test Soil/ Unit Horizon	Flake Weight (g)	Size	Number of Use Edges	Description
So	1-Ap	3.4	L	1	Utilized flake (scraper/graver)
So	1-Ap	1.3	L	1	Utilized flake (scraper)
So	1-Ap	0.2	S	1	Retouched flake frag. (scraper)
So	1-A/B	0.9	S	1	Retouched flake (scraper)
So	1-A/B	0.4	S	1	Utilized flake (knife, graver)
So	2-Ap	4.3	L	1-2	Utilized flake (scraper, knife)
Re	3-Ap	3.9	L	2	Retouched flake (scraper, drill)
So	3-Ap	24.3	Ma	1	Retouched core (knife, scraper)
Lo	3-Ap	4.5	L	1	Utilized flake (scraper)
Re	3-Ap	43.4	L	1	Utilized core (battered)
Re	3-Ap	8.3	L	1	Utilized flake (scraper)
Lo	3-Ap	25.9	Ma	1	Utilized flake (scraper, knife)
Re	3-A/B	7.9	Ma	1	Utilized flake (scraper)
Lo	4-Ap	22.1	Ma	1-2	Retouched flake (scraper, spok sh)
So/Lo	4-Ap	19.9	Ma	2	Retouched flake (scraper, spok sh)

Chert Type:
So - Standard Onondaga
Lo - Lockport
Re - Reynales

Flake Size:
S - Small
L - Large
Ma - Macro

Table 3. Arbitrary subdivisions of a six stage biface reduction sequence (After Callahan 1979).

1	Tool Blank	Oblong flake or chert fragment with two potential faces and evidence of striking platform preparation for flake removals initiated at the edge of the piece.
2	Biface Pre-form	Oblong flake or chert fragment with two faces and several flake removals on each face initiated from the edges and directed toward a medial ridge.
3	Biface 1	Multiple flake removals from both faces reaching the medial ridge with one reaching the medial ridge on one face.
4	Biface 2	Multiple flake removals from both faces reaching the medial ridge with one that crosses over the medial ridge on one face.
5	Biface 3	Total flake scar coverage on both faces; less than 5% cortex remaining and multiple flakes crossing over a medial ridge on both faces.
6	Finished Bifacial Tool	Tool completion through edge finishing and the addition of notches or other hafting elements.

Table 4. Summary of bifacial preforms (After Hartner and Perrelli 1996).

Chert Type	Test Unit-Soil Horizon	Weight (g)	Biface Reduction Stage	Other
Re	TU 3-Ap	27.7	1-2	Whole
Lo	TU 3-Ap	20.2	2-3	Fragment
Lo	TU 3-Ap	7.5	5	Fragment
Lo	TU 3-B	96	2	Whole
Lo	TU 4-Ap	59.5	3	Whole
Lo	TU 4-Ap	57.2	4	Whole
Re	TU 4-Ap	47.1	1-2	Fragment
Lo	TU 7-Ap	12.1	4	Fragment

Chert Type:
Re - Reynales
Lo - Lockport

1985). Stages have been employed in this analysis due to the fact that they provide a standardized and replicable means of artifact discrimination and allow for potential differences between artifacts to be explored consistently in the formulation of conclusions regarding technological origins.

Three bifacial preforms from Test Unit Four were subjected to the attribute analysis as outlined above. Two of the preforms were of Reynales chert and the other of Onondaga chert. Based on their physical attributes, the preforms appear to be in different stages of production, but it is uncertain whether these preforms are cores or represent unfinished formal tools. These preforms all have little to no (0-30%) cortex remaining, and are all in early to intermediate stages of reduction, that is to say, between Stages 1-4. The retouched flake tools from Unit One were all of standard Onondaga chert, as was the lone sample from Unit Two. Those from Units Three and Four are predominantly of Lockport or Reynales chert, although a single retouched Onondaga core was recovered from Unit Three and a single retouched Onondaga/Lockport flake was recovered from Unit Four.

Core Types

Core types are defined based on morphology, flaking patterns and other characteristics that are presumed to have an overt or underlying technological significance. Within our process of analysis, four potential core type categories are offered: 1) amorphous, 2) bi-polar, 3) bifacial, and 4) unifacial. Amorphous core type stages are not explicitly defined due to the fact that amorphous cores (Johnson and Morrow 1987) display irregular, unplanned flaking patterns. Given that flakes are struck from single or multiple platforms and at odd angles that produce irregular edges, shapes, and thickness, we find that varying degrees of platform preparation can accompany any amorphous core reduction. Since most cores display minimal platform preparation, we

Figure 5. Bifacial preforms from Test Unit 4. From left: Stage 1, Stage 4, Stage 3.

follow Andrefsky (1998) and recognize the distinction between unprepared unidirectional and multi-directional cores.

A very small number of blocky cores, bifacial preforms, and utilized/retouched flakes make up the lithic assemblage from Rowley Road. All these materials were recovered from Units One, Three, and Four. Units Two, Five, and Six produced no finished tools or cores, and Unit Two produced a single utilized flake. Units Two and Six are the closest to Cayuga Creek, and Unit Five is the unit located farthest to the east. Whether this reflects a spatial organization is uncertain, but seems to suggest that certain spaces (i.e., Unit Three) were utilized in the reduction of different types of chert. Two cores of Lockport chert from Unit Three were also examined using the methodology described above. Both cores are blocky in form and possess striking six striking platforms of approximately 90 degrees. Core One had one whole striking platform with 100% cortex remaining, and all but one platform had at least 50% cortex remaining. Core Two had less than 60% total cortex remaining with three cortical striking platforms. These blocky Lockport cores were the only two recovered from the Rowley Road Site, and may suggest further differentiation in use among the different chert types.

Discussion

The distribution of flakes and artifacts by size type at the Rowley Road Site offers some interesting points for discussion. The trends found in Unit Three are generally representative of all the site deposits found north of the road, with all test units possessing similar qualitative deposits but varying considerably in quantities. This unit possesses the greatest number of macro, large, small, micro, and blocky flakes, as well as retouched and utilized flakes compared to all other test units, a factor that is illustrated by the dramatic drop in

excavated material found in Units Four and Seven which are located to the west towards the shore of Cayuga Creek. In addition, a total of four bifacial preforms were recovered from Unit Three—all in various stages of manufacture and representing 50 percent of all the bifacial preforms recovered from the Rowley Road Site in total—a factor that suggests that the primary activity at this particular reduction center was oriented toward bifacial core reduction. Table 5 shows the average artifact category percentages for each test unit.

In sum, the Rowley Road Site appears to fit into the more general spatial pattern typical of Archaic period sites.

Figure 6. Stage 4 Bifacial preform from Test Unit 7.

Smaller sites, such as camps, from this period are generally situated very near to the water while more permanent or seasonal sites tend be located on promontories or hillocks not far from the water source. The site is strongly reflective of the Brewerton phase of the Laurentian Archaic culture, a non-ceramic, pre-horticultural, hunting, fishing, and gathering cultural pattern dating to approximately 2000 A.D., and extending from central New York to southeastern Ontario (Ritchie 1980). Two types of sites characterize the Brewerton phase: large village/campsites located on major bodies of water, and small, briefly occupied campsites. The Rowley Road Site appears to fall into the latter category. It may also be associated with a larger multicomponent site, the Kowalik Site (UB 2808), located approximately 200 m north of Rowley Road (Hartner and Perrelli 1996:7). Archaic and Late Woodland projectile points were recovered from the Kowalik Site, which may have been the location where the tools begun at Rowley Road were ultimately finished.

Confidence in dating the site is strengthened by a comparison of the site and its assemblage to those of the Late Woodland period. In contrast to the Archaic period, Late Woodland Owasco culture (c. 900 A.D.-1300 A.D.) settlement patterns are markedly different from earlier cultures. Late Woodland sites reflect a more sedentary lifestyle, due in large part to the adoption of horticulture as the primary means of subsistence, and the existence of a distinct style of ceramic production. This sedentary lifestyle also resulted in the establishment of large villages that served as permanent base camps. A small site such as Rowley Road, therefore, would likely show evidence of processing resources which would be used in a settlement located elsewhere. Indeed, the lack of paleobotanical and faunal remains suggest that Rowley Road was a center for lithic reduction but not resource processing, further supporting the dating of the site as Archaic.

Table 5. Average artifact category percentages for each test unit. For flake size, Macro >1", Large <1", Small <½" but > ¼", Micro < ¼".

Flake Size and Artifact Class	Test Unit						
	TU 1	TU 2	TU 3	TU 4	TU 5	TU 6	TU 7
Macro flake	0	0	1.5	0.1	0.1	0	1.7
Large flake	0.8	0.2	19.4	2.2	0.2	0.2	1.8
Small flake	4.8	0.1	42.3	9.5	0.1	0.3	3.4
Micro flake	2.4	0	6.8	1.3	0	0	0.5
Blocky flake	0.1	0	0.1	0.1	0	0	0.1
Retouched flake	0.1	0	0.2	0.1	0	0	0
Utilized flake	0.2	0.1	0.2	0	0	0	0
Bifacial preform	0	0	0.2	0.2	0	0	0.1
Hammerstone	0	0	0	0.1	0	0	0.1

The identification of Rowley Road with the Late Archaic period requires a general discussion of the Late Archaic toolkit. As suggested by Rasic and Andrefsky (2001), Archaic toolkits incorporated both blade and core tools which were used within specific functional contexts. Bifacial core tools tend to be more generalized than blades because they produce much more varied, and therefore functionally flexible, flakes. The preponderance of evidence at Rowley Road for bifacial reduction suggests a desire on the part of the knappers for a flexible toolkit that was amenable to a variety of different situations. Furthermore, the fact that five different kinds of chert were recovered from the site suggests an intimate knowledge of each chert type's unique properties, which may have further influenced the use of bifacial reduction. This is a particularly interesting facet of the Rowley Road assemblage since Lockport and Seneca cherts were readily available from Cayuga Creek while Onondaga chert, making up most of the utilized flakes, was less easily acquired. This indicates that Onondaga chert may have been used in a different way than the other chert types.

The fact that no Stage V and VI bifaces were recovered, and the very low number of cores and bifacial preforms of all stages, suggests that while bifacial reduction was being conducted in some capacity at Rowley Road these types of tools were not finished at the site itself. The lack of finished, formal tools at Rowley Road points to a number of possible interpretations. A large number of the flakes have cortex remaining, suggesting that while bifacial reduction was taking place at the site, the tools were probably not finished there. Furthermore, the relative lack of microflakes at the site strengthens this notion. Because microflakes are often indicative of very late stage (i.e., Stage V and VI) lithic reduction, their relative absence at Rowley Road suggests that tools of this kind including knives and projectile points were not being finished, if produced at all, at the site. If these types of tools were being produced and finished at the site, then unfinished tools broken during manufacture would be expected among the assemblage. Indeed, the lack of unfinished tools further supports the interpretation that tools were being finished elsewhere than at Rowley Road.

It is also possible to make inferences about the level of social complexity of Archaic-period peoples. Sievert and Wise (2001) suggest that sedentism may promote the production of a large variety of tools since there would be more time for tool maintenance activities. They suggest that as people become sedentary, they become reliant on a comparatively specialized lifeway; however, the tools they produce will be of a greater variety. This is because the resources utilized by that society will become more specialized, which in turn results in an increase in the variability of tools. Furthermore, a sedentary lifestyle allows for more time for the creation and maintenance of a range of formal tools. This does not appear to be the case at the Rowley Road Site, where the evidence for tool making is limited to bifacial reduction. The lack of variety in tool manufacture, therefore, may indicate a somewhat high degree of mobility among the people at Rowley Road.

Due to the generally poor preservation of faunal material in eastern North America, only a generalized statement can be made about the subsistence activities that took place during the Archaic period at the Rowley Road Site. The inhabitants likely exploited freshwater resources as well as land resources such as nuts, fruit and wild game. This prolific use of resources would encourage an extensive toolkit beyond the biface. However, this is not seen in the archaeological record (Sievert and Wise 2001). The Rowley Road Site is located near abundant lithic raw material and yet more formalized tools were being manufactured, as opposed to less formalized, more expedient tools. Wasting of the lithic material using expedient tool technology would not seem to be an issue because of the location, but formal tool technology persists. This likely is due to raw material availability within the context of a hunter/gatherer system (Kelly 1988). Occupation of the site was likely seasonal, as the abundance of game would have been greatest during the warm summer months (Cowan 1999) and the deep snows characteristic of western New York winters would have made acquisition of raw materials difficult. Therefore, Rowley Road is believed to be a biface manufacturing area and the people, in anticipation of poor lithic resource availability, curated the unfinished bifaces.

Conclusion

The occupation at the Rowley Road Site was characterized by Archaic mobile hunter/gatherers who used the site seasonally for lithic procurement. It is suggested, based upon the spatial and debitage analyses, that the site was used as a biface production site. However, the knappers stopped short of producing finished tools at the site, and it is suggested that the inhabitants of Rowley Road took their Stage III-IV bifaces with them to another occupation site, possibly to the larger campsite north of Rowley Road for later finishing. The southern section of the site does not show intensive biface production, whereas the northern part of the site, particularly in close proximity to Unit Three, shows a high intensity of production. Different chert types, particularly Onondaga, appear to have been utilized in different ways and in different places around the site. Furthermore, the lack of hearths and faunal materials also suggests that the site was not extensively occupied, and was probably not a kill/butchering site. The complete lack of any

ceramic artifacts suggests that the people who occupied the site did not utilize a ceramic technology, further validating the association of Rowley Road with the Late Archaic. However, as noted above, these conclusions are necessarily tentative, as further excavations were not conducted outside the immediate "Area of Potential Effect" for the Rowley Road Bridge Construction Project.

Our analysis suggests that a variety of lithic production techniques were being employed at the Rowley Road Site. Since bifaces require more skill and time to prepare but can be re-sharpened and reused when required (Goodyear 1979; Parry and Kelly 1987; Sollberger 1971), there is considerable reason to make heuristic inferences regarding the functional purpose of the site and the seasonable accessibility to the abundant chert deposits located in and along the creek bed as well as importing chert core material from off-site. Seasonal constraints of accessibility may have required a return to the site on an annual or semi-annual basis for the preparation of bifacial preforms for stockpiling, a strategy documented as common practice by mobile forager populations (Binford 1979; Kuhn 1994). Another possibility that made the site optimal in addition to the chert sources may have been the seasonal accumulation of driftwood carried by the drainage which would have provided a relatively abundant source of fuel. Ultimately, a number of factors may have made the site attractive and functionally sustainable.

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Homo Navigatio and Pre-Columbian Irish North Atlantic Ocean Voyages

Denis Foley, Lewis Henry Morgan Institute, SUNY Institute of Technology, Utica-Rome, New York

This study examines man the sailor, primarily in the North Atlantic. The focus is on Irish voyages, but others may have traveled the North Atlantic, including the Inuit, Norsemen, Portuguese, Basque, and Bretons. Archaeologist Alice Kehoe (1992) has provided special insights into the history of North American migrations. Gearoid Ó Donnchadha (2004) has separated, myth from truth in the saga of St. Brendan's voyages in his translation and analysis of the eighth century Navigatio Sancti Brendani Abbatis. *Published Norse manuscripts provide collaborative evidence of the extent of the Irish forays and settlements in the North Atlantic.*

Introduction

The debate concerning the Irish in America before Columbus has often been clouded by both myth and political thinking. Each European country wants to be the first to have discovered America. On the other hand, the navigational ability of prehistoric and historic non-Viking sailors, as well as the capacity of their boats for blue water journeys has not been seriously considered. This article represents an attempt to evaluate the evidence that pre-Columbian travel to the New World by Irish monks could and did take place.

After reading Samuel Elliot Morison's account of Brendan's voyages in his classic *The European Discovery of America: The Northern Voyages* and the detailed account by Kerry native, Gearoid Ó Donnchadha, in his *St. Brendan of Kerry, the Navigatio: His Life and Voyages*, which contains a translation of the Latin *Navigatio Sancti Brendani Abbatis* and the *Beatha and the Vita*, the author and Lewis Henry Morgan Institute SUNY-IT staff undertook two field trips to Fenit, Ireland. The goals were to interview Gearoid Ó Donnchadha and to evaluate the sources he used.[1] Researchers also interviewed residents and sailors of Kerry as to the folklore, ships, and navigation techniques of ocean sailing (Foley 2009-2011).

[1]Research was undertaken in the archives of the National Library of Ireland in Dublin and County Library in Tralee. The principal researchers, archaeologist Denis Foley and graphic artist Gregory Montgomery, intended to sail with Father Gearoid O'Donnchaha past the Statue of Brendan in Fenit Harbor. Father O'Donnchadha provided useful suggestions and insights in his careful critique of this article. Sincere thanks are due to this mariner of Fenit.

Background

Alice Kehoe (1992:240) notes that archaeology has had a sort of "Monroe Doctrine" that excludes serious discussion of pre-Norse voyages by other societies from the Neolithic onward. Norse travel in the North Atlantic in the tenth and eleventh centuries is well documented and accepted by both historians and archaeologists. The accepted historical fact is that the first European traveler in North America, a Norse Icelandic merchant who sailed toward Labrador but never set foot in North America, was Bjarni Herjolfsson. His voyage is dated 986 B.P. (Morison 1971:40). Leif Ericksson, son of Erik the Red, reached Newfoundland in approximately 999 B.P (Wallace 2006). The Norse settlement, *L'Anse aux Meadows*, at the northern tip of Newfoundland, has been carbon-dated to approximately 1000 B.P. (Coe et al. 1986:17; McGhee and Tuck 1977). Yet, a cogent argument can be made with varying degrees of certainty of much earlier Atlantic crossings by European and Native American navigators.

Argument One

Two main arguments have been put forward regarding the possibility of pre-Norse navigation in the North and South Atlantic. The first is based in mythology, comparative archaeology, and the accepted navigational skills on both sides of the Atlantic. It ponders Neolithic and later Bronze and Iron Age sailors attempting long distance ocean voyages by design or accident.

Alice Kehoe (1992) offers a thesis of possible transatlantic contact on both sides of the Atlantic prior to the historic period. She hypothesizes possible trans-ocean voyages by Neolithic period fishermen, from both America to Europe, and from Europe to America. The waning warm climate that climaxed in the third millennium B.P. made the North Atlantic more hospitable for fishermen than subsequent colder periods. Kehoe cites as evidence for a possible Neolithic transatlantic contact the abrupt appearance of Northeast Woodland pottery similar to contemporary Scandinavian pottery around 1000 B.P. Examinations of Irish pottery from the same period also indicate similarities with Northeast Woodland pottery. Much comparative

research needs to be undertaken in relation to pottery types. Also, ground slate knives were used on either side of the North Atlantic during the late archaic and Northern European Neolithic periods. Slate knives, excellent for slicing mammals and cod, were useful on either side of the northern ocean. The North American Clovis spearhead projectile point which is found as far south as Costa Rica also is similar to the European Solutrean spearheads of France and Spain. Kehoe notes:

> Because the peoples on both sides seem to be fairly matched in courage, boats, and a compelling reason to venture on the deep sea, contact could have been initiated from either side [Kehoe 1992:240].

Yet, there was no solid evidence to support this hypothesis until recent reexaminations of early sites in North America. Mt. Verde in southern Chile has been dated to 14,800 B.C. and the Meadowcroft Rockshelter Site in Pennsylvania to at least 14,225 B.C. (Snow 1989:27; Renfrew and Bahn 2008; UNESCO 2012). America's "First People" could not have traveled at this time through gaps in the glaciers. The likeliest scenario is that they paddled or sailed along the Pacific coast south. Both the Neolithic Caribs and other West Indian sailors had dugout canoes, although there is little evidence of their sailing westward. However, a notation exists in a book read by Columbus, who wrote in the margins:

> People from Katay came east. We have seen notable things especially in Galway Island. A man and woman on some wood dragged in by storms of admirable form [Winchester 2010: 90].

Speculation exists that these were Carib sailors, blown eastward by storms, who caught the Gulf current. It is an interesting aside that Christopher Columbus had an Irish seaman, Gillermo Ires (William Harris), on the Santa Maria. He was from the map-making center of Galway, and sailed on Columbus' first voyage (Columbus 1992:226).[2] Saint Brendan established his last monastery at Clonfert, County Galway. Some speculate that the images on the doorway of the church at Clonfert depict Native American images (Ashe 1962:361, footnote 27).

As late as 1940, native West Indians sailed the Caribbean in 20 ft dugouts with one and two masts, and bottoms roughly adzed into a very flat V-shape. They had masts of saplings with neither shrouds nor stays. Crew placement and a paddle served as a rudder. The boats were unsinkable and righted easily. Philip Chase, in one of the few firsthand accounts of the sailing capabilities of the Carib dugouts, describes the boat's seaworthiness:

> My boy had specified in engaging the boat that I was to be allowed to sail it. Having run down wind out of the harbor the skipper with malicious grin now motioned me to take the helm and sail the packet up wind back to port. I reached also for the sheet. He made a scornful gesture, turned his back and moved forward to take the bailer in hand while his mate was sent to the forward thwart. Here his usefulness became apparent as soon as I started to put the craft on the wind and prepare to beat toward the harbor.
>
> With the wind abeam, or even one or two points for' of the beam, the long boat made surprisingly little lee-way, but when I flattened the sheet and headed up I found at once that the length and straightness of the keel and the small size of the rudder made it utterly useless to attempt to luff to meet a heavier puff of wind. By the same token, the boat could not, by putting the helm hard over, be made to turn fast enough or keep her headway long enough to fill away on the other tack. Here was where the mate stationed forward with the paddle came in. As soon as we were in the eye of the wind he paddled valiantly on what had been the lee bow and forced her around [Chase 1942:72].

The Irish had large dugout canoes, upward of 15 m in length (50 ft). A Bronze Age dugout (the Lurgan canoe), carbon dated to 2200 B.P., was found in 1902 in Addergoole, County Galway (N. Gregory 1997, 1998). Built of oak, it was too big for use in the lake in which it was found (Figure 1). The gunwale holes on the side indicate the possibility of an outrigging. If this was so, the dugout would be capable of blue water sailing, but, having no high bow, as the Haida canoe, it would have difficulty in long blue water voyages. Such a canoe could have a tripod mast system. A small sail could be attached a mast step hole towards the bow or aft (N. Gregory 1997, and personal communication 2012). The Lurgan canoe could have been steered by paddles similar to those used by the Haida of the Pacific Northwest or natives of the Caribbean. Haida dugouts of similar size have traveled in the Pacific and are quite seaworthy. Franz Boas claimed the Northwest Coast natives had sails before contact (Boas 1908:446).

[2]Some postulate Columbus may have visited Galway some time between 1476 and 1479 (Columbus 1992: 230). However, Morison (1971) believes this unlikely.

Figure 1. Lurgan Canoe. (1902 photo reprinted with permission of the National Museum of Ireland).

Curraghs

Neolithic sailors could have used *curragh* boats reaching as long as 36 ft. These were more suitable for blue water sailing than their dugout predecessors (Figure 2). They had large sails made of reed, bound by leather. Tripod masts with legs attached through the gunnels, instead of a center mast, could have been used. The willow reeds would have been strung and bound by leather belts. The rudder was similar to the Haida canoe and would have consisted of an oar that could be inserted in the rear of the craft. Their frames were made of hazelwood; hides were stretched over a wickerwork frame. Upward of 100 hazel rods could be in a 36 ft boat. The skin of the boat could be from a seal, walrus, sheep, or cow. Rawhides of deer, caribou, and elk, although not durable, have been used in these skin boats as well (Ashe 1962:67-70; Severin 2000:36).

In explaining the Neolithic ruins of Newgrange (5000 B.P.), Lewis Henry Morgan Institute researchers speculate that the massive entrance stones had to be transported via water on huge *curraghs* and then rolled on logs (Figures 3 and 4). The white quartz, from the Wicklow Mountains, or the black cobblestones, from Carlinford that adorn the front of Newgrange had to be transferred somehow. One explanation is by boat (Powers, personal communication 2009.) During the Bronze Age, Indo-European, non-Celtic peoples inhabited Ireland. Later settlements in Ireland are recorded in Irish folklore. Irish invasion sagas record three migrations to Ireland. It could be hypothesized that the first inhabitants of a post-Neolithic Ireland were the Firbolgs (A. Gregory

Figure 2. Ocean *Curraugh*. Drawing by Kaitlin Altone.

1998:20). The second were the people of the Egyptian goddess Danu, the so-called Men of Danu or Dea, commonly known as *Tuatha De Danann* (A. Gregory 1998:26-37). The last invasion was the invasion of the Celts (O'Donnchadha 2004:25). The significance of the *Tuatha De Danann*, from a navigational point of view, is the description of their voyage to Scotland to aid the Alba. The significance of a pre-Celtic maritime navy existing in Ireland indicates that in the pre-Celtic period it could be possible for voyages to go as far away as Scotland. If the *Tuatha De Danann* sailed to Scotland, it is also possible that they could have journeyed further westward.

In the myth of Tag in Manannan's Islands (A. Gregory

1998:26-37), Tag's wife and brothers were kidnapped by raiders with nine boats. He built a *curragh* for a long voyage to find his wife. It was made of 40 ox hides and was to be set for an ocean voyage. The epic describes the boat:

> He gave orders for a *curragh* to be built that would be fit for a long voyage. Very strong it was, and forty ox-hides on it of hard red leather, that was after being soaked in bark. And it was well fitted with masts, and oars, and pitch, and everything that was wanting. And they put every sort of meat, and drink, and of clothes in it that would last them through the length of a year [A. Gregory 1998:134].

The epic describes how they sailed on the stormy sea until they could see no land behind them and that they sailed and rowed for 20 nights. Tag's voyage indicates that the *curragh* is quite capable of sailing the North Atlantic. Samuel Eliot Morison also considered the *curragh* well suited to the higher latitudes of the North Atlantic, writing:

> The Irish built not only small curraghs for fishing and inshore work, but big, sea-going ones with mast, square sail of woolen cloth, cordage of ox-hide strips, and lashings of deer sinews or vine roots in lieu of metal fastenings. This type could not sail to windward like the Portuguese caravels, but it had many merits. In a country where timber was scarce but cattle plentiful, the Irish built with what they had, and the resulting curragh had excellent qualities. Being little more than a big wicker basket covered with skins, she rode the waves like a cork and stayed dry in heavy seas which broke over any heavy wooden ship [Morison 1971:16].

Morison's observation of the seaworthiness of the *curragh* was corroborated five and six years later in the transatlantic voyage of Tim Severin (Severin 2000). Tim Severin's two-mast oak-tanned cowhide curragh, completed a voyage in his reenactment of St. Brendan's voyage from Ireland north to Scotland, over to the Faroes, to Greenland, and then onward to Newfoundland. Although Severin was attempting to recreate St. Brendan's sixth century voyage, the *curragh* that he used was similar to earlier ocean-going *curraghs* that predated Brendan, used by both monks (such as St. Ailbe and Barinthus) and pre-Christian navigators (such as Tag Bran and the Sons of Corra) (Ashe 1962:86, 117, 119). The *curragh* is prominent as the vessel of choice

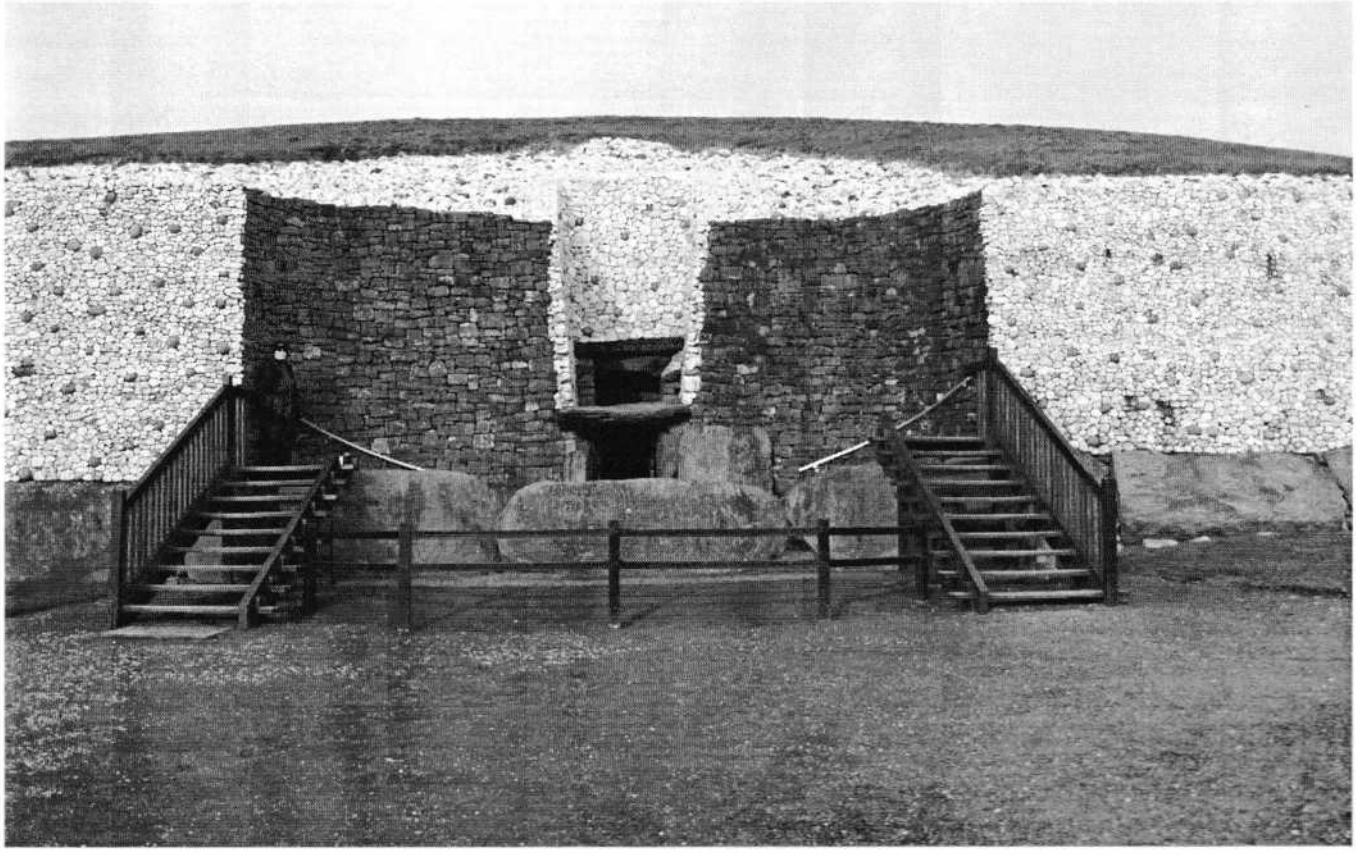

Figure 3. Entrance of Newgrange, Photograph by Gregory Montgomery.

Figure 4. Mounds at Newgrange, Photograph by Gregory Montgomery.

for many pre-Christian Irish navigators, especially the mythological heroes.

These blue water voyages, whether by Tag, Bran or other ancient pre Christian Irish mariners, took time (Ashe 1962:56-57). Many may not have been as fortunate as Tag to return and become part of Irish mythology. However, in the myth of the land of eternal youth, *Tír na nOg*, the hero, meets a maiden and they go to the West. When he returns years later and touches the ground, he becomes an old man. The mythology of sailing to the land of eternal youth permeates pre-Celtic Irish folklore. It is a land surrounded by mist and it is to the west. The mythical lands are warm, possibly hinting at a southerly Atlantic location, again adding to speculation that the Irish sailed both northwest and south then west (A. Gregory 1998).

Wooden Boats

Caesar, in book III of *De Bello Gallico*, describes a naval battle at the estuary of the Loire in the summer of 55 B.P. (Caesar 1957, translated by Moses Hadas). The Gauls and their allies, using *curraghs*, some from Britannia under the leadership of the *Veneti* of Brittany, confronted the Romans with 220 ships. The Celts' ships had tall masts and sails sewn from beaten hides.[3] Their sails were more attuned to the North Atlantic winds than the Roman *Vela*. The Celtic ships were entirely propelled by wind and were larger and higher off the waterline. Caesar was bewildered because they could sail so close into the wind due to the navigational ability of their captains. However, the Celtic fleet became becalmed, and the Romans were able to board the Celtic ships with grappling hooks. Caesar specifically states that the Celtic vessels were extremely good at navigating the rough open sea. The Roman general writes:

> The design and rigging of their own ships suited these conditions. Their hulls were flatter than ours, and so could more easily ride shallows and ebb tides. Their prows and sterns were high, for protection

[3]In his Gaelic wars, Julius Caesar killed thousands of Gauls or Celts. His slaughter was the largest single mass ethnic cleansing until the Jewish Holocaust of WWII.

> against high waves and winds. Their timbers were all oak, to withstand the roughest violence. The cross-timbers were a foot thick and riveted with iron bolts as thick as a man's thumb. Iron chains, not ropes, held the anchors. Instead of sails they used finely dressed hides, whether because they had no flax and did not know how to work it, or (as is more probable) because they thought canvas was not stout enough to sustain ocean tempest and violent gales and not suitable for controlling such massive ships. In encounters with their ships ours were superior only in speed and in oar-propulsion; in other respect theirs were more adaptable and better suited to local wind and weather. They were so stoutly built that our ships could not damage them with their beaks, and so tall that missiles could not easily reach them, nor could they conveniently be caught with grappling irons. Moreover when winds freshened they could ride a storm out easily, and when the tide ebbed rest safely in shoals without fear of rocks or reefs; for our ships all such contingencies were dangerous [Caesar 1957:64].

Caesar is describing wooden ships. He is not describing the hide *curragh*. When Brendan failed to find the Island of Paradise on his first voyage with a *curragh*, he is directed to construct a larger wooden boat by his foster mother, Ita. The vessel sails with a crew of 60 (O'Donnchadha 2004:49).

Argument Two

The second line of argument is that Irish monks set sail for spiritual reasons—whether to pilgrimage, to hasten the apocalypse, or to flee from internecine religious warfare or Viking raiders. The Irish thought the end of the world was near. They sought to bring about the Day of Judgment, which would occur when all non-Christians were converted. The Irish monks sought suffering; they understood deprivation and hardship. An ocean voyage provided an opportunity for redemption. The Irish monks were on a pilgrimage; they did not have deserts as did their Coptic Christian mentors. Many sought relief in the solitude of the ocean. The Atlantic was conceptualized as a (Gaelic) desert, a sea of solitude (Ashe 1962; McGhee and Tuck 1977; O'Donnchadha 2004).

Some Irish, such as Brendan and Cormac, established monasteries by sailing west from Galway and Scotland. If they continued past Iceland they would have reached America's shores. Iceland is closer to North America than it is to Ireland. The sixteenth-century linguist and French diplomat who had access to all the libraries of Europe, Guilliome Postel, is reported to have said that what was later to be the New World had been "regularly visited by the Gauls, and has been frequented for the last 1,600 years" (Bailey 1969:4). Cormac reached arctic waters in a gale and returned to Ireland safely (Ashe 1962:34). Others, such as Columban, went east. Monasteries were founded along the Danube, in the Swiss Alps, and in Kiev, Russia (Cahill 1995:195).

The Voyages of the Apocalypse: Fifth and Sixth Centuries

The names *Brazil* and *Hy-Brazil* are thought to come from the Irish *Uí Breasail* (meaning "descendants [i.e., clan] of Breasal"), one of the ancient clans of northeastern Ireland. Hy-Brazil was also considered to be the land of saints and the destination of St. Brendan on his second voyage. It was described as surrounded by mist. Portuguese explorers, when they reached South America, named the land Brazil, thinking that they had reached Brendan's island, which was on the maps of the period (Morison 1971:21).

Dicuil, an Irish clergyman, became the geographer at the Court of Charlemagne. Circa 825 B.P., (Tierney 1967), Dicuil's account is the first historic mention of Irish hermits visiting Iceland and marveling at the midnight sun in 795 B.P. His history contains the account of an Irish monk who had been to Iceland and noted that one could pick lice off your shirt at midnight as easy as at noon. A further mention of such a journey occurs in a collection of Icelandic sagas written in the thirteenth century. From the *Icelandic Book of Settlement*:

> Before Iceland was peopled by the Northmen there were in the country those men whom the Northmen called papas [priests]. These were Christian men who would not remain here among heathens, and the people believed that they came from the West, because Irish books and bells and crosiers were found after they left [Burnham n.d.].

The *Flateyjarbok* describes Ireland the Great, possibly modern day Nova Scotia, as the home of a monastic community. The Norse got this information from two Native American boys. The *Flateyjarbok* notes:

> Snorri, Karlsefni's son, was born the first autumn, and he was three winters' old when they took their departure. When they sailed away from Wineland, they had a southerly wind, and so came upon Markland, where they found five Skrellings, of whom one was bearded, two were women, and two were children. Karlsefni and his people took the

> boys, but the others escaped, and these Skrellings sank down into the earth. They bore the lads away with them, and said that their mother's name was Vætilldi, and their father's Uvægi. They said that kings governed the Skrellings, one of whom was called Avalldamon, and the other Valldidida. They stated, that there were no houses there, and that the people lived in caves or holes. They said that there was a land on the other side over against their country, which was inhabited by people who wore white garments, and yelled loudly, and carried poles before them, to which rags were attached; and people believe that this must have been Hvitramannaland [White-men's-land], or Ireland the Great. Now they arrived in Greenland, and remained during the winter with Erik the Red [Anderson 1907:61].

Historic documentation for the presence of the Irish in the New World also appears in the *Navigatio Sancti Brendani Abbatis*, which depicts St. Brendan's journey westward and descriptions of the lands he encountered (Ó Donnchadha 2004:13). This journey was supposed to have occurred in the sixth century, but the *Navigatio* itself dates from the ninth century. There are various versions of this source and scholars, such as historian Samuel Elliot Morison, have used various versions of the *Navigatio* to track Brendan's North Atlantic voyages. Gearoid Ó Donnchadha uses a translation of a 850 B.P. Latin version located in Paris, France, which indicates two voyages of seven years each in total, one to the higher latitudes of the North Atlantic, approximately 50 to 65 degrees latitude, and the other possibly in the lower latitudes of the North Atlantic, approximately 20 to 30 degrees latitude.

This source should not be interpreted literally as one man's journey, but as a series of many abbots voyaging over centuries to establish western missions and encountering other functioning monastic communities. Fr Gearoid Ó Donnchadha, elaborates in a 2010 interview: "It is like every home run champion story was merged into one Mickey Mantle saga" (Figure 5). He further notes, "The Roman Catholic Church hierarchy in Armagh merged the two Patricks into one St. Patrick too" (personal communication to Foley; field notes 2009-2011).

Fr Gearoid Ó Donnchadha relies heavily on Father Denis O' Donoghue's translation from the Irish of *The Irish Life of Brendan*, written about 725 B.P. (O'Donnchadha 2004: 13, footnote 1). This epic contains descriptions of voyage incidents not detailed in the *Navigatio*. Significantly, the *Navigatio* describes the vines on the Island of Strong Men thusly: "Two members of the choir brought a basket filled with purple grapes" (Ó Donnchadha 2004:79). These

Figure 5. Father Gearoid and Denis Foley, Fenit, Ireland. Photograph by Gregory Montgomery.

grapes were the largest Brendan had ever seen. This island was flat and covered with white and purple flowers. The growth of grapes is limited to below 50 degrees latitude, so this places Irish monks on or south of Newfoundland.

The Second Migration Westward

After the Council of Whitby in 664 B.P. held in the abbey of Whitby in North Umbria, England, the stricter Augustinian Roman Christianity was adopted over the older native monastic Celtic faith. Here, St. Colmán met the Pope's emissaries with a bishop's crosier in one hand and, in some accounts, a sword in the other. Factional warfare broke out in Ireland. The Annals of Ulster in 764 B.P. recount that the monks of Clonmacnoise killed 200 monks from the Abbey at Durrow (Ó Donnchadha 2004:34). Many Irish fled to inland lake defensive *crannogs* (dwellings built on piles in lake or swamps). Others in monastic communities may have fled westward from Ireland to establish new, safer communities. According to Morison, when the Irish monks encountered the Viking raiders in 870 B.P. , after decades of raids, they not only fled inland but sailed westward to Iceland, then to Greenland. When the Vikings came to Greenland, the monks again moved west and ended up somewhere on the east coast of North America (Morison 1971:27).

There is no archeological evidence of their settlement in Labrador or Nova Scotia; however there is historical documentation. The Vikings had a name for the area of the Irish post-Whitby settlements. It was called Ireland the Great or "Hvitramanna Land which lies west in the ocean nigh to Vinland the Good" (Morison 1971:27). Lastly, a further mention of the Irish monks in the North Atlantic west of

Greenland appears in the *Flateyjarbok*, a collection of Icelandic sagas written in the thirteenth century. Morison et al. summarize as follows:

> In the ninth century A.D. Scandinavians from Norway occupied Iceland, driving out the Christian Irish colonists who had been living there in isolation for almost two centuries. These Celtic wanderers were bold and skilful navigators in their skin-covered boats, and the sea-voyage from Iceland to Greenland, or from Greenland to the Labrador, is much shorter than that from Ireland to Iceland. Hence, the American continent. If so, they were absorbed or exterminated by the Indians, leaving no trace that has been uncovered [Morison et al. 1980:10].

If one gives credence to the probability of Irish monastic-type settlement as far as Newfoundland, and the communities staying there two centuries, one question arises.[4] Due to their celibacy, how could they reproduce? Morison questions whether the settlement could last for a number of years if the monks were supposedly celibate. But celibacy was an ideal, and it was only after the efforts of William the Conquer in the eleventh century that the Norman Church hierarchy was able to enforce celibacy (Curtis 1945:38). The post-Whitby exiles may have also included selected laymen and women. Genetic typology indicates that much (32%) of the Icelandic population has a genetic marker similar to that of the Celtic-speaking population of West Ireland (O'Donoghue 1989). Similar shared gene pool evidence exists for the modern Faroes (Ó Donnchadha 2004:15). The Irish Church has a mixed record on priestly marriage and sexual relationships. For many years, the parish priest on the Aran Islands had a wife and children. An Irishman, when questioned, replied, "the people never thought it was a big deal" (Hedderman, personal communication 2011).

Modern Evidence: Re-enactments

Whether they sail double-sailed dugout canoes, medieval *curraghs*, raft reed boats, or fifth-century oak Irish trading vessels, re-enactors have become part of a new folklore, which challenges conventional archaeological migration theory. The most vocal advocate in favor of Atlantic travel at lower latitudes has been world-record holder and maritime re-enactor Bill Verity. He is the Thor Heyerdahl of Irish marine archaeology. Verity launched his boat on St. Patrick's Day, March 17, 1969 from the west coast of Ireland and arrived in May 1969 in Barbados.

Documentation from the Tralee City Council notes:

> Mr. Verity previously sailed alone from the United States to Ireland in a tiny twelve-foot craft which he built himself. He has now reversed the journey, this time sailing in the path of the navigator Saint Brendan, who was born in Tralee in 484 A.D. and became famous for his sea-voyaging, reputedly being the first European to reach the Americas.
>
> Mr. Verity's vessel is constructed and modeled on the boat used by Saint Brendan, and he set himself to follow the path of the saint to America. His boat was launched from FENIT, TRALEE, on St. Patrick's Day 17th March, 1969, and the epic voyage was scheduled to commence in May of the same year [Tralee City Council 1969].

Bill Verity based his idea of the second voyage of Brendan from a passage in the *Irish Life*. On his return after years at sea in the North Atlantic in vain search of the Promised Land, Brendan visits his foster mother, Ita. The noble lady notes:

> My dear son, why did you go on a voyage without consulting me? For the land you are seeking from God, you will never find in those dead stained skins for it is a holy consecrated land and men's blood has never been split therein. However, build you a wooden vessel and it is thus. You will most likely find the land in due time [Ó Donnchadha 2004:49].

The Tralee Library, County Kerry, contains a file of interviews given by Verity to the local newspapers. *Kerry's Eye* (1985) published Verity's map of the second voyage of Brendan from Kerry to the Azores and then from the Azores to Barbados (Figure 6). Verity expounds in the interview:

> According to the legend, you couldn't get in the land promised to the Saints in a boat of skin. That is why he came back here and made the boat of timber so that he could pass into the realm of Hi-Brasil...He [Brendan] went the Southern route...He would never have got to the land promised to the Saints, which is described as Eternal Summer. That is Florida or the Bahamas [Kerry's Eye 1985:9].

Verity was determined to prove his point. He sailed solo

[4]James Tuck and Robert McGhee (1977) indicate that Ogham writing in boulders at St. Lunaire, Newfoundland resemble Irish Ogham alphabet used in pre-and early Christian Ireland. The writing appears to be before known European settlement. Further research is being undertaken by the Lewis Henry Morgan Institute, SUNY-IT Archeological team at three Newfoundland sites.

a replica of Brendan's boat from Kerry to the Bahamas in 115 days (Figure 7). He reenacted Brendan's second voyage, to the south and west, following the winds and currents via the Azores, through the Sargasso Sea, to the Bahamas. Verity completed his journey, showing that a difficult solo voyage was possible. The southern Atlantic Ocean voyage would have been easier for Brendan who had an experienced crew and a larger vessel.

In the historic period, the monks in South Kerry used both *curraghs* and 40-foot wooden, single-masted boats for their voyages west. Bill Verity believed that the *curragh* was used primarily for coastal navigation and island-to-island sails (Kerry's Eye 1985). For more difficult blue water navigation, the Irish monks from Kerry used wooden boats similar to the boats that were used throughout the Mediterranean until the twelfth century (Kerry's Eye 1985).

Other modern evidence includes the following ocean journeys:

- Captain J. C. Voss, in a Nootka dugout canoe made by natives in the Pacific Northwest at Vancouver Island, left Victoria, British Columbia in May 1901 and crossed the Pacific, Indian, and Atlantic Oceans, arriving in England in September 1904 (Voss 1926) (Figure 8);

- Thor Heyerdahl sailed from Peru to Raroia in the Tuamotu Islands between April and August 1947 (Heyerdahl 1990);

- Timothy Severin sailed from the west coast of Ireland in May 1976 to Newfoundland in July 1977, after a two-month layover in Iceland (Severin 2000).

- Master Haida carver, Saaduuts, whose 40 ft dugout *Ocean Spirit*, was built in 2003 at the Center for Wooden Boats in Seattle, Washington. Today the dugout sails the coast of the Haida Gwaii Islands (known also as the Queen Charlotte Islands in Canada) routinely completing the blue water voyage from Hydaburg to Klawock and demonstrating the trans-ocean seaworthiness of so-called primitive or simple water craft (Saadouts, personal communication 2012).

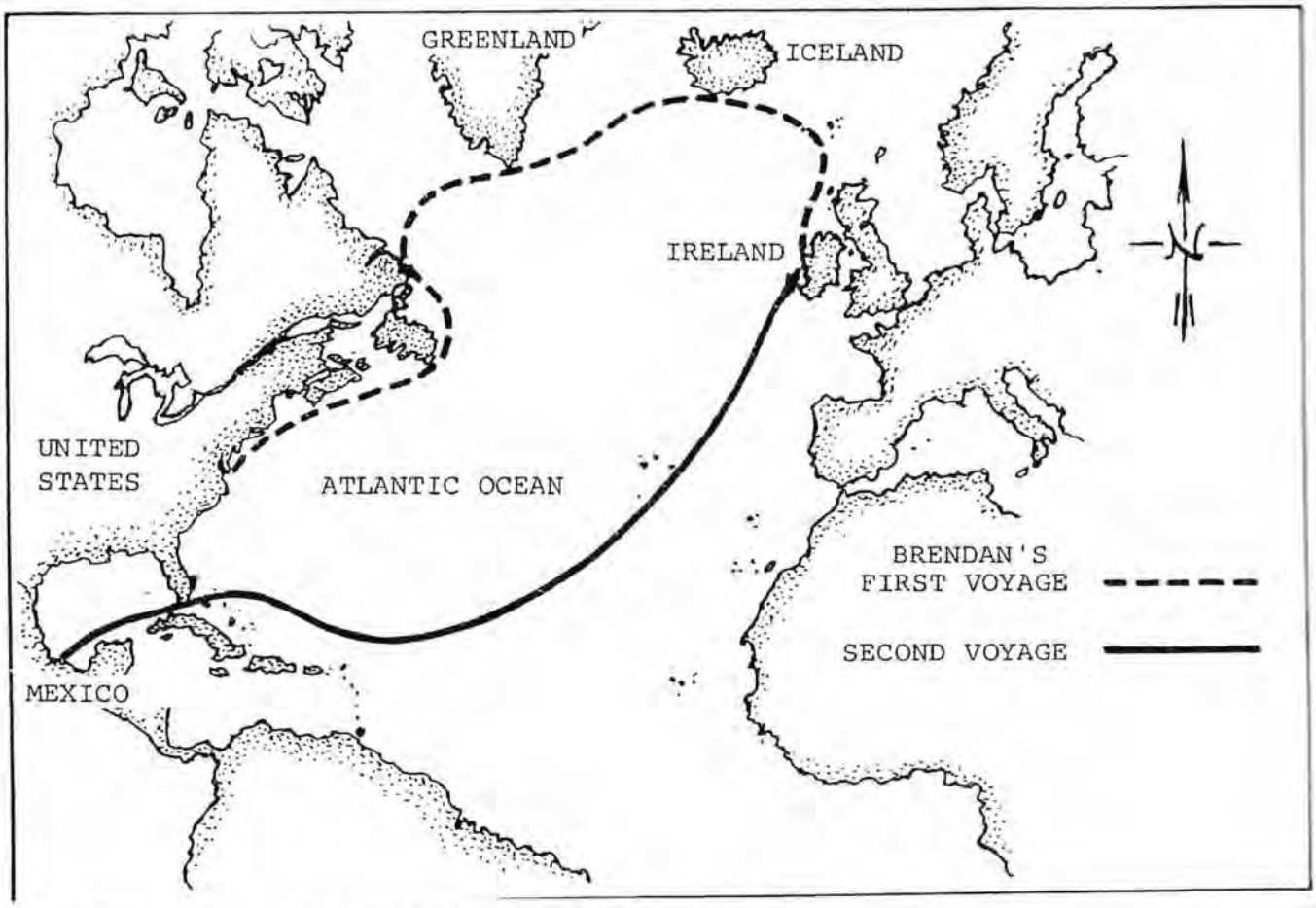

Figure 6. Verity Map, Extension, March, 1967, Sellersville, Pennsylvania. (Edited by author).

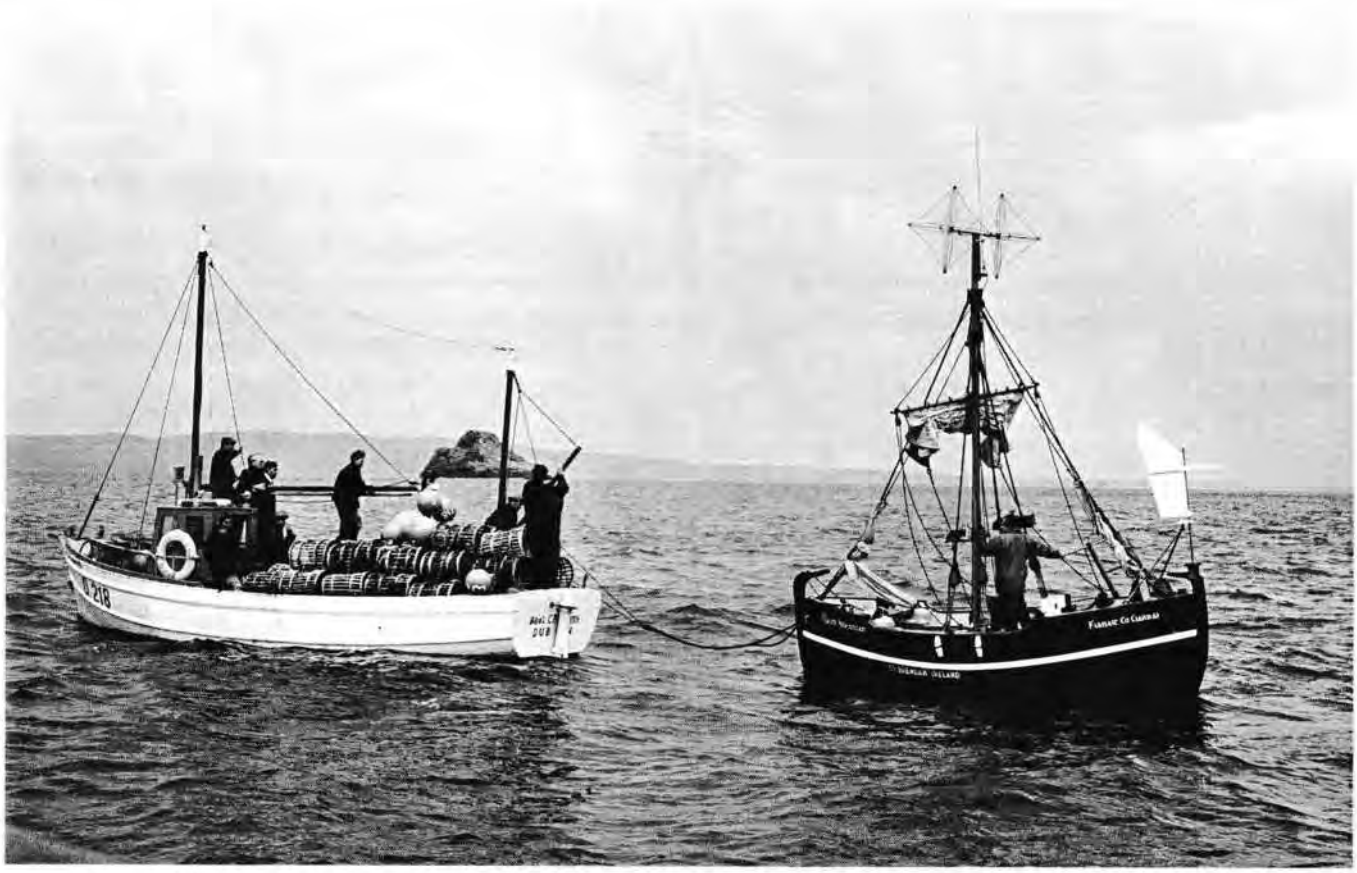

Figure 7. William Verity setting sail. Photograph by Padraig Kennelly.

Conclusions

The Atlas of Ancient America (Coe et al. 1986) rejects arguments raised in favor of pre-Norse European travel to the New World in clear-cut terms, placing adherents' writings in the genre of historical fiction. Yet, William N. Fenton (1998:19)) instructs that in reconstructing history oral tradition is crucial and contains patterns that go deep into the prehistorical record. This researcher has used Fenton's "upstreaming" methodology in interviewing native Irish sailors who have continued the Brendan oral tradition. Fenton's fieldwork concept looks at the present cultural survivals, documents them, and asks the researcher to then retreat to the archives to examine published and unpublished sources, as well as the archeological record, to explain if possible what was present in the oral tradition.

In the case of the Irish in the North Atlantic, a review of the documents indicates that many are based on enduring oral traditions. Respected geographers and historians, such as Postel, and navigators of the time, such as Columbus, recognized the Irish as cross-Atlantic sailors. It is important to understand the *Navigatio* as depicting many separate Atlantic voyages, possibly through centuries (Ó

Figure 8. Tilikum, Maritime Museum of British Colombia.

Donnchadha 2004). The Irish North Atlantic voyages and settlements west of Greenland are described in the *Saga of Erik the Red* and the *Flateyjarbok* (Anderson 1907: McManis 1969). Historians such as Samuel Morison and Steven Commager write of the Irish reaching Canada's Maritime Provinces (Morison et al. 1980:10).

Few scholars doubt the *Navigatio*'s northern latitude landings, which include modern day St. Kilda, Rockwell, the

Faroes, Iceland, and Jan Mayen. Irish presence in the Caribbean is much less certain and has no acceptance by mainstream scholars. The *Navigatio*'s description of the Island of Paradise recounts Brendan's second voyage. This indicates a South Atlantic voyage landing in the Caribbean or Florida. Little written evidence exists beyond the *Irish Life* of the warm water Atlantic voyages west of the Azores or Canary Islands. The *Navigatio* does, however, describe the becalmed Sargasso Sea and prevailing winds and currents at 20 degrees latitude.

Lastly, Kehoe's (1992) speculation of Neolithic, Bronze, or early Iron Age maritime North Atlantic crossings has merit in that the sailors on either side of the Atlantic had the courage, maritime skill, and the vessels to cross the perilous ocean. One vessel, the *curragh*, was especially seaworthy when compared to a sailing dugout. The Northwest Pacific-type of sailing dugout could make a transatlantic journey, as demonstrated by Captain J.C. Voss over a century ago. More research needs to be done on Native American sailing vessels' blue water capabilities. No one has brought forth the argument of return voyages in a sailing dugout.

The major significance of the Irish in the North Atlantic is that continental navigators believed the Celtic monks had sailed westward and returned. This was the Irish monks' lasting contribution. Those exploring the North Atlantic knew they were not the first Europeans to pass west of the Pillars of Hercules and that cross-Atlantic voyages were possible.

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Theodore Whitney Commendation Award Presented at 2012 NYSAA Annual Meeting

Anne-Marie Cantwell, Metropolitan Chapter

Anne-Marie Cantwell began her archaeological career at the Smoking Point Site in Staten Island in the late 1960s working with Bert Salwen and Donald Sainz. Her interest in coastal and Eastern Woodlands archaeology continued throughout her career, until this day. She has worked on both prehistoric and historic sites in the midwest and New York area, as well as with museum collections, and has published extensively on trade, ritual, urban archaeology, colonialism, and reburial. With Diana Wall she wrote *Unearthing Gotham: The Archaeology of New York City* which received the Society for American Archaeology's Book Prize and the New York Library Society's Book Prize. Because of its success, the publisher, Yale University Press, encouraged them to do a follow up volume, *Touring Gotham's Archaeological Past: 8 Self-Guided Walking Tours in New York City*. Since then, Anne-Marie has been focusing on colonialism, especially the archaeology of New Netherland, and has embarked on a project studying the entangled encounters of Algonquian, Iroquoian, African and European peoples in that colony. She has been publishing on this new project, frequently with Diana Wall, that will result in a book, *In Hudson's Wake: The Archaeology of New Netherland*. Anne-Marie has also co-edited monographs dealing with more general issues such as research with museum collections and ethical dilemmas facing anthropologists. She has always believed in promoting archaeology and has won several teaching awards at Rutgers University-Newark and has lectured extensively to the general public. She has served on various archaeological society boards and recently, she and Diana Wall revitalized the Metropolitan Chapter of NYSAA.

NYSAA Awards Committee
Peter P. Pratt Chair

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Anne-Marie Cantwell

2000 *Ethics and Anthropology: Facing Future Issues in Human Biology, Globalism, and Cultural Property*. Annals of the New York Academy of Sciences V. 925 (Edited with Eva Friedlander and Madeleine Tramm).

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2004 *Aboriginal Ritual and Economy in the Eastern Woodlands: Essays in Honor of Howard Dalton Winters*. Illinois State Museum: Kampsville Studies in Archeology and History 30 (5) (edited with Lawrence A. Conrad and Jonathan E. Reyman).

2004 *Touring Gotham's Archaeological Past: 8 Self-Guided Walking Tours in New York City*. Yale University Press, New Haven (with co-author Diana diZerega Wall)

Theodore Whitney Commendation Award Presented at 2012 NYSAA Annual Meeting

Diana diZerega Wall, Metropolitan Chapter

Diana Wall has been active in archaeology in New York State since 1977. She has worked at historic sites throughout the greater metropolitan area. Diana was one of the first people to work at large urban sites in New York. She was co-principal investigator, with Nan Rothschild, of the excavations at the Stadt Huys Block Site, the first large-scale excavation in New York City, in 1979-80. She also co-directed the excavations at other sites, including 7 Hanover Square, and was the principal investigator at the Telco Block Site, and the Assay Site excavations, as well as directing several excavations in Greenwich Village backyards. Most recently she was a co-director, with Nan Rothschild, of the Seneca Village project in Central Park. She has published extensively on the archaeology of the New York City, including *Unearthing Gotham: The Archaeology of New York City* (co-authored with Anne-Marie Cantwell), which received the Society for American Archaeology's Book Prize and the New York Library Society's Book Prize.

Along with Anne-Marie Cantwell, Diana has served the NYSAA by bringing about the revival of the Metropolitan Chapter of the NYSAA. The chapter had been moribund for many years, and is now thriving again.

NYSAA Awards Committee
Peter P. Pratt, Chairman

Selected Bibliography

Diana diZerega Wall

1991 Sacred Dinners and Secular Teas: Constructing Domesticity in Mid-19th-Century New York. In *Gender in Historical Archaeology*, edited by D. Seifert, Society for Historical Archaeology Special Publication 9.

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2004 *Touring Gotham's Archaeological Past: 8 Self-Guided Walking Tours in New York City*. Yale University Press, New Haven (with co-author Anne-Marie Cantwell).

Theodore Whitney Commendation Award Presented at 2012 NYSAA Annual Meeting

Nan Rothschild, Metropolitan Chapter

Nan Rothschild has been active in archaeology in New York State since 1970. She has worked at both pre-Columbian and historic sites throughout the Greater Metropolitan area (she has also worked extensively in the southwest). She was principal investigator of the excavation of the Kaeser Site in the Bronx, a site that had first been discovered by long-term NYSAA member, Edward Kaesar. Nan was one of the first people to work at large urban sites in New York. She was co-principal investigator, with Diana Wall, of the excavations at the Stadt Huys Block Site, the first large-scale excavation in New York City, in 1979-80. She also directed the excavations at other sites, including 7 Hanover Square, as well as at the Vander Ende Onderdonck House in Ridgewood, New York. She also worked on CRM projects throughout the Hudson Valley, and has published extensively on the archaeology of the state, as well as on other topics. Most recently, she and Diana Wall co-directed the excavation of Seneca Village, an African-American and Irish community located in what is now Central Park.

Nan's research encompasses a number of components. Principal among them are the formation of urban communities, as well as colonialism and its expression in interactions between Native Americans (Mohawk and Pueblo) with Europeans (Dutch and Spanish), including the use of food and other aspects of material culture to reflect identity. Furthermore, Nan's fieldwork record is prodigious: Co-director, Mapping and Excavation of 18th century site , San Jose de las Huertas, Placitas, New Mexico; of Lower Pescado, a 13th and 19th century site on the Zuni reservation; Co-director of the Columbia Field School in Geneva, New York; and Co-director of the Columbia Field School in the Bighorn Mountains, Wyoming.

NYSAA Awards Committee
Peter Pratt, Chair

Selected Bibliography

Nan Rothschild

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IN MEMORIAM

Robert J. Gorall (1933-2011)

Robert J. Gorall, age 78, died Sunday September 4, 2011 at home in Red Creek, New York. He was born on January 6, 1933 in Rochester, New York, the youngest of eight children of the late Frank and Viola Hoffman Gorall. He attended East High School before enlisting in the U.S. Navy, serving on the *U.S.S. Wm. M. Wood*. Bob was a patriot—proud of his naval service and the opportunity to serve his country. After his discharge he worked in construction while attending Rochester Institute of Technology. Through his occupation as an ironworker, he came into contact with Native American Indians and learned of their culture and history. In 1993, he was adopted by the Seneca Hawk Clan Mother, Myrtle Peterson, at her home in Randolph, New York. The adoption ceremony was performed by Seneca Hawk Clan Chief, George D. Heron. Bob was named "HA JA DA GEH HUS," meaning "He Who Helps" in the Seneca language.

While living in Newark, New York, Bob was one of thirteen founders of the Newark-Arcadia Historical Society. He served on the Board of Directors of the Native American Cultural Center in Rochester and that of the Anthropology Section of the Rochester Academy of Science. He was the co-founder of the 1794 Canandaigua Treaty Commemoration Committee and was a representative in the Eastern States Archaeological Federation. As a long time member, he served as President of both the NYSAA and its Lewis Henry Morgan Chapter, and was a member of the William Beauchamp and Thousand Island Chapters. He received the NYSAA Certificate of Merit. He was also Associate Editor of *The Iroquoian* from 1981-1991, and had several articles published in *The Iroquoian* as well as in *The Bulletin* of the NYSAA.

Bob was an amateur archaeologist with fieldwork experience on many sites and years of research and documentation. He was always willing to share his knowledge and research with professionals and non-professionals equally. He was a true gentleman and those of us who knew him were privileged to have experienced his friendship.

In 1995, Bob retired after 35 years of service as an inspector in the tool and gauge laboratory of Xerox Corporation. He is survived by his loving wife of 57 years, Muriel; sons Jeffrey (Kim) of Mesa Arizona, Thomas (Joretta) of Palmyra New York, and David (Jana) Mitchell of Peyton Colorado; daughters Christina (Roger) Champion of Red Creek New York, Julia (David) Young of Newark New York; and eleven granddaughters, two grandsons, twenty-five great grandchildren, and several nieces and nephews. He was pre-deceased by a daughter, Charlotte, and a son, Patrick, as well as a stepson, Stephen Mitchell of Mesa Arizona.

(Photo courtesy of Muriel Gorall).

Robert DeOrio

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IN MEMORIAM

Fred Assmus (1946-2012)

(Photo courtesy of David Johnson).

Fred Assmus of Middletown, New York was born in Brooklyn on January 16, 1946, son of the late William and Dorothea Koehler Assmus. He was a retired controller at American Applications in Middletown and Wykoff, New Jersey. He is survived by his loving wife of 39 years, Sharon Mueller Assmus, his sister-in-law, Yukki Assmus of Rolling Meadows, Illinois; nephew, George Assmus of Rolling Meadows, Illinois; and numerous cousins.

He was a lifelong and enthusiastic member of the New York State Archaeological Association and the Society for Pennsylvania Archaeology. He was a past President and Trustee for the Orange County Chapter of the New York State Archaeological Association and was Treasurer of the New York State Archaeological Association. He also served as liaison for the Society for Pennsylvania Archaeology and was a member of Chapter 14, the Forks of the Delaware, where he served as Trustee. Fred often talked about growing up along the Delaware River where Native American artifacts were frequently observed along the shoreline. This interest was fostered by his former teacher and mentor, William Leiser, and grew into a lifelong quest to study the Native Americans who once lived there. Fred's specialty was Native American ceramics, and he presented numerous lectures to archaeological associations throughout the region.

David Johnson

NEW YORK STATE ARCHAEOLOGICAL ASSOCIATION

ADIRONDACK CHAPTER - QUEENSBURY
AURINGER-SEELEY CHAPTER – SARATOGA SPRINGS
WILLIAM M. BEAUCHAMP CHAPTER - SYRACUSE
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METROPOLITAN CHAPTER – NEW YORK CITY
MID-HUDSON CHAPTER – REDHOOK
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INCORPORATED ORANGE COUNTY CHAPTER –MIDDLETOWN
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THOUSAND ISLANDS CHAPTER – PHILADELPHIA
TRIPLE CITIES CHAPTER – BINGHAMTON
VAN EPPS-HARTLEY CHAPTER – FONDA

Minutes of the Concurrent General Business Meeting
And Executive Committee Meeting
NYSAA 95th Annual Meeting
Holiday Inn & Suites, Johnstown, New York
April 15, 2011

Opening:

NYSAA President Sherene Baugher called to order the regular meeting of the General Business meeting at 7:05 pm on April 15, 2011 with opening remarks and thanks to the hosting chapter.

Present:

Officers Present:

President, Sherene Baugher; *Treasurer*, Fred Assmus, *Corresponding Secretary*, Abigail Herlihy, and *Recording Secretary*, Lori Blair.

Chapter Roll Call:

Present: Adirondack, Auringer-Seelye, William M. Beauchamp, Frederick M. Houghton, Finger Lakes, Long Island, Lewis Henry Morgan, Mid-Hudson, Incorporated Orange County, Incorporated Upper Susquehanna, Triple Cities, and Van Epps-Hartley.

Absent: Chenango, Metropolitan, Thousand Islands

A. Reports of the Officers

President: Sherene Baugher

- Member survey is completed.
- Awards ceremony will be after lunch.
- Sissie and Sherene are co-editors of the newsletter and they hope to produce three a year.

Vice-President: Sissie Pipes

- Sissie sadly reported the passing of Nan Hayes, wife of Charles and Muriel Gorall mentioned that Bob Gorall is very sick.

Treasurer: Fred Assmus—report on file.

- Compared to last year, funds down about $900.
- Need to pay Funk and Fisher Foundations.
- Dues are down about $130.
- Postage up.

➢**Motion to accept treasurer's report by Sharon Assmus, 2nd by Peter Pratt. Passed.**

Corresponding Secretary: Abigail Herlihy—report on File.

- Abby is keeping up with former CS Bill Bouchard's trend for tracking; generally down about 60 memberships; already 400 for this year.
- She will be sending reminders about deadlines and mailings.
- She needs contact information (phone and email) for each member.
- Chapter audits for dues/memberships and contact information.
- Bulletins were mailed out; check with her if you did not receive one.
- In this year's packets are a CD with the handbook along with copies of tax exempt certificate and constitution.
- She reminded all that checks and membership forms should go to her and she will forward

checks to Fred.
- There was a comment about using PayPal as an option; Sissie Pipes will give Fred Assmus Hope Luhman's contact information to see how NYAC handles this.

Recording Secretary: Lori Blair—report on file.
- The minutes of the April 2010 General Business meeting were reviewed and approved with minor revisions at the November 2010 Executive Committee Meeting.
- The minutes of the November 2010 Executive Committee Meeting were reviewed.

➢**Motion by Fred Assmus, 2nd by Sharon Assmus to accept the minutes of the November Executive Committee Meeting as written. Passed.**

B. Report of the Committees

Awards and Fellowships
- The committee met and the awards will be presented after lunch on Saturday.

Chapters and Membership—Sherene Baugher, Chair

Membership Study—MaryAnn Niemczycki—summary of survey on file.
- There were 266 responses, 225 usable surveys; 20 paper responses.
- More hits on electronic link but not everyone completed the survey.
- The information can be used to figure out how to make chapters more attractive for membership.

High School Clubs—Christina Rieth
- Put together guidelines for teachers to work with their students.
- Will post flier on website.

Publications—

Bulletin - presented by Bill Englebrecht—report on file.

Newsletter—Sissie Pipes
- Lisa Anselmi is doing the bulk of the work.
- Trying for 3 issues a year.
- Need material from the membership.
- In general, material can be submitted to Sherene but can also go to Lisa or Sissie. Next issue—material due April/May for Spring/Summer issue.
- There was a discussion about some people without email or computers not getting the newsletter and chapters needing to mail them to their members without access to electronic copies.

Research and Transactions—report is on file.
- The final layout has been completed by Martha Sempowski and Gian Cervone.
- Discussion of costs: preliminary $15 for members and $25 for non-members.

Finance – Fred Stevens—Report is on file
- Needs original NYSAA charter because there have been problems with opening up new bank accounts.
- Budget based on the past and merely project previous year's money. He wants to contact chapters about plans and preparing a budget based on real numbers.

Legislative—Doug Mackey

No report.

Library—Long Island Chapter

No report.

Archives—Bill Bouchard

No report.

Public Service Award—Sherene Baugher
- The Public Service Award allows NYSAA a mechanism to recognize public officials, developers, crm firms, homeowners who work cooperatively with archeological community.
- Sherene will put information in next newsletter.

Program for 2012—Orange County

The 96th NYSAA annual meeting will be hosted by the Orange County Chapter. Not too many details yet. They are currently looking for venues. It will be the week after SPA meetings. The program will be emphasizing Paleo sites.

Special Appointees

ESAF Liaison—Tim Abel—report on File

NYAC Liaison—presented by Sissie Pipes
- Archaeology season posters are available.

- NYAC is going to try and get corporate sponsorship since cost is about $1000.
- The 2012 poster will be by SUNY Buffalo Survey Program.
- In 2013, NYSAA will be producing the poster; Need a commit of about 4 or 5; each chapter should submit an image that represents them.

Funk Foundation—Wayne Lenig and Ed Curtin

- Haven't funded any grants last year; last grant was to Scott Stull.
- Several projects that were funded have been completed and published.
- Efforts are focusing on increasing funds—looking for corporate sponsors. Other ways will be discussed by the board, like annual commitments of $400 from CRM firms or individuals.
- Ed encourages any and all contributions—contact him or check the website.

Society for Pennsylvania Archaeology—Fred Assmus

- The meeting was held last week; appeared that participation was down a bit but a new chapter was formed, bringing the number of chapters to 30.
- Next year's meeting will be in Clarion, PA.

ASPI—no report

PANYC—no report

flyer on program was made available.

OLD BUSINESS—none

NEW BUSINESS

➢ **Motion by Fred Assmus, 2nd by Delores Elliot for NYSAA to contribute $300 to the Funk Foundation. Voted, accepted and Passed.**

RE: Fisher Fund: it was discussed that we need a report on fund activities.

➢ **Motion by Sissie Pipes, 2nd by Ruth Wakeman that NYSAA make no contributions to the Fisher Fund and that we request an accounting of expenditures. Passed.**

Sherene Baugher will contact John Hart for a report on the accounts and how money is being used.

➢ **Motion by Wayne Lenig, 2nd by Richard Wakeman to contribute $300 to Archeology Season poster. Passed.**

There was a question from the floor about the availability of copies of the NYSAA Constitution. Abby Herlihy has included a cd in the Secretaries' packets that contains a copy.

It was noted that recently there have been problems with the website and free server. Hugh Jarvis is looking into options to remedy the situation.

➢ **Motion by Abigail Herlihy to adjourn, 2nd by Wayne Lenig. Passed.**

The meeting adjourned at 8:55 pm.

Post adjournment mentions:

Some topics of discussion for Novembers Executive Committee Meeting

- At large issue
- Website—having members only section for access to constitution, back issues, etc.
- Survey information is available to chapters for their respective members
- Voting procedures at the Business and Executive Committee Meetings is for two designated delegates from each chapter.

Respectfully submitted,
Lori J. Blair
NYSAA Recording Secretary

Minutes of the Executive Committee Meeting
First United Methodist Church, Liverpool, NY
November 19, 2011

Opening:
NYSAA President Sherene Baugher opened the meeting at 1:00 P.M. and thanked the Beauchamp Chapter for hosting the meeting.

Present:

Officers Present:	President Sherene Baugher	
	Vice-President Sissie Pipes	
	Treasurer Fred Assmus	
	Recording Secretary Lori Blair	
Officer Absent:	Corresponding Secretary Abigail Herlihy	
Chapter Roll Call:	Beauchamp:	Vicky Jayne, Greg Sohrweide
	Finger Lakes:	Laura Johnson-Kelly, Wendy Bacon
	Houghton:	Susan Maguire, Bill Engelbrecht
	Morgan:	Sissie Pipes, Griffin Hamell (NYSAA webmaster)
	Orange Co.:	Fred and Sharon Assmus
	Thousand Islands:	Tim Abel
	Van Epps Hartley:	Charlene and Wayne Lenig

Absent: Adirondack, Auringer-Seelye, Chenango, Inc. Long Island, Lower Hudson, Metropolitan, Mid-Hudson, Triple Cities, Upper Susquehanna.

Reports of the Officers

President: Sherene Baugher
Sherene discussed some the topics to be introduced including NYSAA's new website, our charter, letters written in support of NYSM staff.

Vice-President: Sissie Pipes—no report

Treasurer: Fred Assmus—Report on file
There is approximately $45k in cash assets. Discussion concerning tax exempt status. Fred brought copies of Tax form ST-119.1 (Exempt Organization Exempt Purchase Certificate 1/09); chapter treasurers would sign for chapter level purchases and State treasurer would sign for state level activities. Each chapter should use state tax exempt number
- see Handbook page 3.
- discussion as to need for filing IRS form 990N; Fred states not necessary, W. Lenig disagrees.

Corresponding Secretary: Abigail Herlihy—read by Sherene Baugher
Abby will be sending out audits of chapter memberships as of 2011 in December or January as well as bulk mailing to membership. She requested any announcements to be included be forwarded to her.
- she has set up an email for Corresponding Secretary nysaa_secretary@hotmail.com

Recording Secretary: Lori Blair
Copies of the minutes of the April 2011 General Business meeting were sent by email to the executive committee and distributed at this meeting. These were reviewed.
➢Motion to accept as written: Fred Assmus; 2nd: Vicky Jayne; passed unanimously.
- Lori will ask each chapter for copy of their charter if they exist and will see which chapters are using State tax exempt number.

Reports of the Committees

Publications:
The Bulletin—Report by Martha Sempowski read by Sherene Baugher.
- editing and initial formatting of Bulletin 126 has been completed; it will include an obituary of Gordon D'Angelo by Peter Pratt. The Bulletin should be completed by January 2012.
- Bulletin 127 may be out in late 2012.
- need to clarify the issue of electronic versus hard copy of future Bulletins.
- Charles Hayes has asked to stay on as Editor of the Bulletin for the near term, should he decide to step down, Martha has agreed to assume the duties of Editor.
- Greg Sohrweide will contact Peter Pratt about Gordon's obituary; Gordon wrote his own so Barbara will be contacted concerning that one.
- Bob Gorall passed away. Charles Hayes will be contacted to write obituary for the Bulletin.

Researches and Transactions—Bill Engelbrecht.
He will contact NYSAA institutional members and send them a copy. He also contact institutions to sell the volume on a consignment basis, however, no takers as of yet.
➢Motion by Wayne Lenig to authorize copies of Researches and Transactions be sent to all institutional members. 2nd by

Sue Maguire, passed unanimously.

Newsletter
Lisa Anselmi sent latest issue (Fall) to Sherene and Sissie—should be out in January.
The deadline for submission is November; still some space if any chapter needs.

CD Sales
Bill Engelbrecht says he only as 1 or 2 left.

Chapters Reports:
Chapters presented brief overviews of their activities and membership.

Adirondack—Abigail Herlihy read by Sherene Baugher; membership is generally steady; they meet monthly at new location at Fort William Henry in Lake George.

Morgan—Sissie Pipes; @50 members; had successful summer dig.

Van Epps—Wayne Lenig; @49 members. They had 9 work sessions over the summer; all officers were re-elected in the fall; they are developing a website.

Orange County—Fred Assmus; @62 memberships with 70 members; they hold monthly meetings; currently excavating an Archaic Site; preparing for annual meeting.

Houghton—@30 members; they meet monthly and have a full slate of speakers, they will send list to Griffin for posting on website.

Beauchamp—Greg Sohrweide; @43 members, hold monthly meetings except July and August; workshop with local school.

Thousand Islands—Tim Abel; @35 members (on paper); only about 4 are active; meet about four times per year.

Finger Lakes—Laura Johnson-Kelly; about 12-15 paid memberships; meet monthly at Ithaca College; speakers on a wide range of world-wide topics.

Liaisons:
ESAF: Tim Abel—report. Meeting was a couple of weeks ago in New Jersey; next year in Ohio with focus on War of 1812. As a paid member, NYSAA is entitled to ½ page advertising and space on website. www.esaf-archeology.org. Orange County chapter will send information on upcoming meeting.

Fund Found. Wayne Lenig—they met in September and voted to have one funding cycle next year, likely granting one project; currently accepting applications.

Fred Assmus—The SPA's meeting is at Clarion Week before ours. Need to coordinate for 2013.

CNEHA—Sue Maguire—Sherene Baugher won CNEHA award; meet next year in Newfoundland.

New Business

1. Website: Web page is now gone due to technical problems. Hugh Jarvis has retired as webmaster however, Griffin Hammel, son of George and member of the Morgan Chapter has agreed to be our new webmaster and is currently designing the new website. It is anticipated that the website will be up in January, albeit it may be a basic page that will be updated and enhanced as we move along. Chapters should send him information such as meeting dates/speakers, digs, etc. as soon as possible to be included in a calendar of events. Updated lists of officers and contact information would be useful as well as your chapter's webpage address if you have one. Griffin's email is gdhamell@gmail.com. New website is www.nysaa-web.org

2.There was a question from one of the chapters concerning the fiscal year and when money should be sent to the State treasurer and secretary. It was decided at a previous meeting that the fiscal year shall run from January 1 to December 31. However, chapters should send checks and membership lists monthly.

➢Motion was made by Wendy Bacon that as of December 1, the membership lists and corresponding checks should be sent directly to the State treasurer, Fred Assmus who will then forward the lists to the Corresponding Secretary. 2nd by Sissie Pipes. Voted, one abstention, passed.

3.NYSAA members are encouraged to submit articles for publication in the Bulletin. A lack of articles could delay production—having a pool of articles would help ensure timely publication. Articles can be submitted to Charles Hayes or to Martha Sempowski. See your handbook for contact information.

Future Meetings

~ The first Call for papers for the Annual Meeting in April is out. The call will be mailed shortly to the

members. Sissie will put on Listserve.

~ The Thousand Islands Chapter has tentatively offered to cohost the 2013 meeting .

Meeting Adjourned (4:00 P.M.)
➢The motion to adjourn was by Fred Assmus, seconded by Bill Engelbrecht. Passed.

Respectfully submitted,

Lori J. Blair
NYSAA Recording Secretary

Guidelines for Manuscript Submissions

General

The Bulletin is a journal devoted to the dissemination of scholarly articles relating to the archaeology of New York State and its environs. It is published annually by the New York State Archaeological Association. Authors should submit an original and two copies of each article, including an abstract and a complete list of references cited in the text, to the editor, Charles F. Hayes III, 246 Commodore Parkway, Rochester, NY 14625-2032. The editor may reject or return an article to the author for revisions, on the basis of either content or style. Authors may request peer rreview of their article. Upon acceptance, authors are asked to submit their article in electronic format—either Windows or Macintosh format. Most current word processing programs can be accommodated. Please see section on *Figures*, below for requirements for electronic submission of images.

Manuscript Organization

Please organize your manuscript as follows:

- Title, author, institutional or chapter affiliation
- Abstract - a single paragraph of 100 to 150 words
- Text
- Acknowledgements
- References cited
- Tables (with captions)
- Figures (with captions listed on a separate page)

Manuscripts should be written as clearly and succinctly as possible. They should be unjustified and double-spaced, on one side of 8 1/2" x 11" paper. Only one space should follow periods and pages should be numbered in the upper right hand corner. Endnotes are to be used instead of footnotes, but they should be used sparingly.

Headings

Primary headings should be flush left, bolded, and at the same font size as the text, with only the first letter of each word capitalized. Secondary headings should be flush left, unbolded, and at the same font size as the text, with only the first letter of each word capitalized. Tertiary headings should be flush left, in italics, and at the same font size as the text, with only the first letter of each word capitalized.

Measurement Units

In order to avoid errors in translation, measurements may be in either English or metric units, as appropriate to the content of the article; however, for further clarification, one may wish to include conversions in parentheses. Commonly used units of measurement such as feet, yards, miles, meters, centimeters, kilometers, and hectares are abbreviated as follows (without periods):

inches	in	meters	m
feet	ft	centimeters	cm
yards	yd	kilometers	km
miles	mi	hectares	ha

In-Text Reference Citations

In-text reference citations should follow the simple *American Antiquity* style within parentheses immediately following the material to which the citation refers (for particulars, see *American Antiquity*, Volume 57, number 4, pp. 749-777). Simple citations should include author's last name and year of publication unseparated by a comma, and if appropriate, the page number(s) preceded by a colon (Smith 1978:222) or Smith (1978:222). Citations involving two authors should include both names; those involving three or more authors should use the first author's name followed by et al. (e.g., Brown et al. 1987). Where more than one publication is being referenced, they should be ordered alphabetically within the parentheses and separated by semi-colons (e.g., Barton 1986; Davis 1975; Wilson 1999). Where there are several references for the same author within a set of parentheses, these are separated by commas (e.g., Adams 1975, 1985; Brown 1988).

Quotations

Quotations of five lines or less should be included in the text; double quotation marks are used. The citation should follow the form indicated above for in-text reference citations, but should always include page number(s). Quotes of more than five lines should be inset in a block and double spaced without quotation marks. Citations, including page numbers, should follow in brackets.

Tables

If at all possible tables should be set up in the same word processing format as the text. They should be as simple as possible and include a short descriptive title above the table itself. Tables should be numbered consecutively as they will appear in text. All tables should be referenced in the text.

Figures

All photos and line drawings are designated as figures and numbered consecutively as they are referred to in the text. **Captions should be submitted on a separate page, not as part of the illustration**. A light pencil marking on the back of the photo or drawing should identify the particular illustration. Photos and drawings should be high quality images reproducible at sizes appropriate to the journal. Authors bear the responsibility for obtaining written permission for the reproduction of any materials protected by U.S. copyrights. Film-based photographic prints and original drawings are preferred, but figures may be submitted as digital image files *if they are suitable for publication*. Digital image files which do not meet the following specifications will be rejected. Photographs should be submitted as rgb or greyscale tiff or pdf files only, 8" x 10" or 5" x 7" at a minimum of 300ppi. Line art should be submitted as bitmap tiff or pdf files at a minimum of 1000ppi. **No other formats, such as jpg, doc, etc. will be accepted.** If the graphic was created in digital form, **submit individual files, not printouts, and do not include the images in a Word document**. Contributors may be required to provide photographic prints or hard copy drawings if digital image files are not useable for publication. Photocopies are never acceptable.

References Cited

The list of references cited should include all references cited in the text (except personal communications), and conversely, only references cited in the text should be listed. **Authors bear the responsibility for double-checking the accuracy of each and every citation used.** The list should be alphabetized by the author's last name, then first name and middle initial. Multiple entries by the same author should be in chronological order with the earliest first. Do not use n.d. unless absolutely necessary—if the date is truly unknown. The format for references should follow the *American Antiquity* Style Guide (see *American Antiquity*, Volume 57, number 4, pp. 749-777). Examples of the most commonly needed formats are listed below:

1. Book with single author
Bradley, James W.
1987 *Evolution of the Onondaga Iroquois: Accommodating Change 1500-1655 A.D.* Syracuse University Press, Syracuse, New York.

2. Book with multiple authors
Burt, William H. and Richard P. Grossenheider
1976 *Peterson Field Guides: Mammals*. 3rd ed. Houghton Mifflin, Boston.

3. Edited book (author is editor)
Morris, William (editor)
1978 *The American Heritage Dictionary of the English Language*. Houghton Mifflin, Boston.

4. Translated book
van den Bogaert, Harmen Meyndertz
1988 *A Journey into Mohawk and Oneida Country 1634-35*. Translated and edited by Charles Gehring and William Starna. Syracuse University Press, Syracuse.

5. Reprinted book
Hale, Horatio E., editor
1963 *The Iroquois Book of Rites*. Reprinted with an Introduction by William N. Fenton, University of Toronto Press, Toronto. Originally published 1883, D.G. Brinton, Philadelphia.

6. Multivolume set
Thwaites, Reuben G., editor
1959 *The Jesuit Relations and Allied Documents: Travel and Explorations of the Jesuit Missionaries in New France, 1610-1791*. 73 vols. Reprinted. Pageant, New York. Originally published 1896-1901, Burrows Brothers, Cleveland.

7. Titled volume in a series
Wray, Charles F., Martha L. Sempowski, and
Lorraine P. Saunders
1991 *Tram and Cameron: Two Early Contact Era Sites*. Charles F. Wray Series in Seneca Archaeology, Vol. II, edited by Charles F. Wray. III. Research Records No. 21. Rochester Museum & Science Center, Rochester, New York.

8. Article in an edited book
Wade, Mason
1988 French Indian Policies. In *History of Indian-White Relations*, edited by Wilcomb E. Washburn. Handbook of North American Indians, Vol. 4, William G. Sturtevant, general editor, pp. 20-28. Smithsonian Institution, Washington, D.C.

9. Article in a journal
Murray, Jean E.
1938 The Early Fur Trade in New France and New Netherland. *Canadian Historical Review* XIX:367.

10. Article in edited volume in a series
Noble, William C.
1992 Neutral Iroquois Smoking Pipes. In *Proceedings of the 1989 Smoking Pipe Conference*, edited by Charles F. Hayes III, Connie C. Bodner, and Martha L. Sempowski, pp. 41-49. Research Records No. 22. Rochester Museum & Science Center, Rochester, New York.

11. Presented paper
Ceci, Lynn
1985 Shell Bead Evidence from Archaeological Sites in the Seneca Region of New York State. Paper presented at the Annual Conference on Iroquois Research, Rensselaerville, New York.

12. Dissertation or thesis
Drooker, Penelope B.
1996 *The View from Madisonville: Continuity and Change in Late Prehistoric Protohistoric Western Fort Ancient Interaction Patterns*. Ph.D. dissertation, State University of New York, Albany. University Microfilms, Ann Arbor, Michigan.

13. Manuscript in press
Brown, William T.
2000 Early Days in Livingston County, New Horizons Press. In Press.

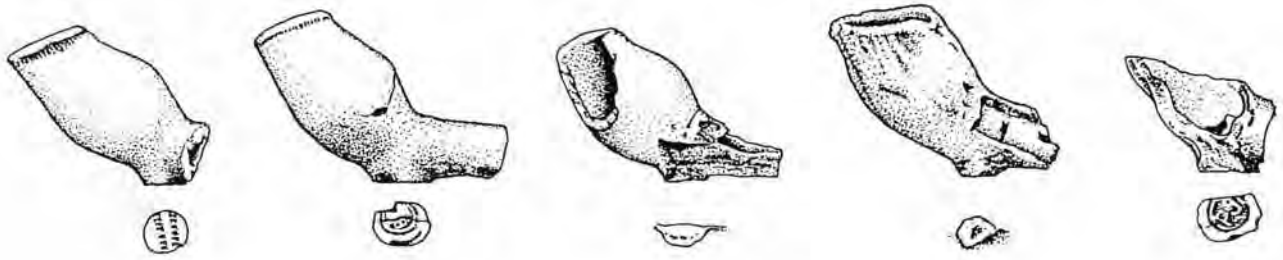
14. Unpublished manuscript
Wray, Charles F.
1978 Field notes: Fugle Site. MS on file, Rochester Museum & Science Center, Rochester, New York.

15. Web pages and electronic documents
Sharp, John
2008 *Washington District of Columbia Biographies: Louis Deblois*. Electronic document, http://genealogytrails.com/washdc/bio_deblois_1.html, accessed July 15, 2009.

NEW YORK STATE ARCHAEOLOGICAL ASSOCIATION

The Archaeology of Maspeth, Long Island, New York and Vicinity

The New York State Archaeological Association is proud to announce the sale of its latest Researches and Transactions publication, Volume XVIII, Number 1. This issue is entitled *The Archaeology of Maspeth, Long Island, New York and Vicinity*, by Stanley H. Wisniewski and Ralph S. Solecki. 104 pages. 59 illustrations. The cost is $10 for NYSAA members, $15 for non-members, plus $2 shipping and handling. Make checks payable to NYSAA and mail to William Engelbrecht, 16 Atlantic Avenue, Buffalo, NY 14222.



The Archaeology of Maspeth, Long Island, New York and Vicinity

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- Louis A. Brennan (1960)
- William A. Ritchie (1962)
- Donald M. Lenig (1963)
- Thomas Grassmann O.F.M. (1970)

Paul L. Weinman (1971)

- Robert E. Funk (1977, 1994)

Peter P. Pratt (1980)

- Herbert C. Kraft (1989)

Lorraine P. Saunders (1999)
Martha L. Sempowski (1999)
William E. Engelbrecht (2004)
Edward J. Kaeser (2006)

Fellows of the Association

Sherene Baugher
Monte Bennett
James W. Bradley

- Louis A. Brennan
- William S. Cornwell
- Gordon DeAngelo

Dolores N. Elliott
William E. Engelbrecht
Lois M. Feister
Stuart J. Fiedel

- Charles L. Fisher
- Robert E. Funk
- Thomas Grassmann O.F.M.
- Alfred K. Guthe
- Gilbert W. Hagerty

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- Donald J. Lenig

Wayne Lenig
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- Julius Lopez

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- Richard L. McCarthy

Mary Ann Niemczycki

- James F. Pendergast

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Thomas P. Weinman

- Marian E. White
- Theodore Whitney

Anthony Wonderley

- Charles F. Wray
- Gordon K. Wright

Joseph Zarzynski

- known deceased

Theodore Whitney Commendation

- Gordon C. DeAngelo (1998)

Charles F. Hayes III (1999)
Carolyn O. Weatherwax (2010)
William E. Engelbrecht (2010)
Nan Rothschild (2012)
Diana Wall (2012)
Anne-Marie Cantwell (2012)

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Thomas Amorosi
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- Fred Assmus

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- Ralph Brown

Art Carver
Leonard Cohan

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Barbara DeAngelo

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George Van Sickle
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James P. Walsh
George R. Walters
Alvin Wanzer

- Beth Wellman
- Henry P. Wemple

Daryl Wonderly
Roberta Wingerson

- Stanley H. Wisniewski

Susan Avery Young