

An Analysis of Post-Medieval Ceramics from the Pendle Hill Witches Archaeological
Excavation

by
Madeleine Elaine Connolly

A THESIS

submitted to
Oregon State University
Honors College

in partial fulfillment of
the requirements for the
degree of

Honors Baccalaureate of Arts in Anthropology
(Honors Scholar)

Presented May 29, 2019
Commencement June 2019

AN ABSTRACT OF THE THESIS OF

Madeleine Elaine Connolly for the degree of Honors Baccalaureate of Arts in Anthropology presented on May 29, 2019. Title: An Analysis of Post-Medieval Ceramics from the Pendle Hill Witches Archaeological Excavation.

Abstract approved: _____

Leah Minc

This analysis seeks to (1) establish a typology of the post-medieval ceramics from the Malkin Tower site, (2) determine vessel forms and extrapolate site function, and (3) establish a tentative chronology for the site. Over four hundred post-medieval ceramic artifacts from the Malkin Tower site were analysed via descriptive and paste analysis, thin section analysis, and a comparative literature review. A typology of the post-medieval wares was created based on the results of the analyses and parallels found in the literature. Vessel forms were identified wherever possible. The primary forms present in this assemblage are storage jars, milk-pans, cups, mugs, and bowls and shallow dishes. Most of the identified wares were in production from the mid-to-late 17th century through the 19th century.

Key Words: ceramics, post-medieval, petrography, witch trials, Lancashire

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I understand that my project will become part of the permanent collection of Oregon State University, Honors College. My signature below authorizes release of my project to any reader upon request.

Madeleine Elaine Connolly, Author

Introduction

The Lancashire Witch Trials of 1612 are the most significant such trials in English history (Clayton 2007, 138). The story begins when Alison Device, grandmother of infamous local wise-woman/traditional healer Elizabeth Southern, went out begging one day in March 1612. She encountered a peddler by the name of John Lawe who she asked for some pins, and when he refused her, she cursed him and walked away. Moments later, Lawe collapsed. Today it is believed that he suffered a stroke, possibly brought on by the stress of being cursed by a known witch's granddaughter (Southern, also known as "Old Demdike", meaning "Demon Woman", leveraged the term "witch" to bring in customers and assure people of her supernatural abilities) (Clayton 2007, 138). While witches were feared and sometimes tried and executed prior to the Lancashire trials, the publication of King James I's anti-witchcraft book *Daemonologie* and subsequent accusation and trial of the Pendle Hill Witches in 1612 brought extreme paranoia to the people of Lancashire and gave magistrates and other law-enforcement agents a chance to secure their status by impressing the king. Combined, these forces resulted in the witch-trial craze that lasted for the next century (Clayton 2007, 153).

After Alison Device supposedly caused Lawe's sudden illness, he was brought to a nearby inn. Lawe's son was contacted with news of the events, and he then came to Pendle Forest to see his father and confront Alison about using witchcraft to harm him. Alison, wracked with guilt over what she had done, confessed (Clayton 2007, 167). Some reports suggest that Lawe asked Alison if she could undo what she had done, and she responded that she did not know how but her grandmother (Southern) would be able to help. Lawe reported the events to the local magistrate, Roger Nowell, who examined and arrested Alison, and then interrogated her

grandmother and another local healer, Anne Whittle, known as Old Chattox, along with several other suspects Alison had named. Alison, Southern, Whittle, and Whittle's daughter Anne Redfearn were all arrested as a result (Clayton 2011, 22) .

Elizabeth Southern died in jail in Lancaster Castle months before the trial began - the Lancaster Assizes did not open until August and she died sometime in May. Her entire family - Elizabeth Device, Alison, and Alison's brother James - were all ultimately found guilty and sentenced to death, along with Anne Whittle and Anne Redfearn, Margaret Pearson, John Bulcock, Jane Bulcock, Isabel Roby, Alice Nutter, and Katherine Hewitt (Clayton 2011, 23). Nine-year-old Jennet Device, Alison and James' little sister, sealed their fates. In April, Nowell had gotten wind of a "witches' sabbath" held at Malkin Tower, the Southern/Device home. At that point, Southern and Alison Device had been arrested, but the remainder of the Device family still resided at Malkin Tower. According to the testimony of James and Jennet Device, their mother (Elizabeth Device, Southern's daughter) invited around twenty local witches, whom they named, to their home on Good Friday for a day of diabolical activities and plotting to free their imprisoned family members and blow up Lancaster Castle. James and Elizabeth Device, along with the others they had named, were promptly interrogated and arrested (Clayton 2007, 231). Nowell kept Jennet and probably groomed her as a witness, and she was not accused and ultimately testified against her own mother and siblings, as well as the other "witches" from the Good Friday gathering whom she and James had accused (Clayton 2011, 115). The trial was of immense cultural and social importance for the people of Lancashire, and the legend of the Pendle Hill Witches is widely known there today and still holds sway over the area.

Malkin Tower, as the site of the “sabbath”, was the stage for one of the most important developments in the trial. Its location was lost following the events of the trial, and the “search for Malkin Tower” has been ongoing for years, with several locations being put forth over the years (Clayton 2007, 258). In the summer of 2018, the most recent archaeological excavation in the search took place at Malkin Tower Farm in Blacko, Lancashire. Malkin Tower Farm has been put forward as a candidate due to its name, which could be a continuation of the Malkin Tower name, as well as its location. The Blacko hillside and surrounding area has long been one of the top contenders for the area of the home (Clayton 2007, 258). The 2018 excavation, under the direction of Dr. Charles Orser, went from June 17 - July 21. The primary goals of the project were to excavate a portion of the modern Malkin Tower Farm site hypothesized to be the location of post-medieval Malkin Tower, to provide information about the material culture of rural 17th century life in Lancashire, and to evaluate the viability of archaeological excavation as a source of information about cultural practices and beliefs around witchcraft in England. The excavation was led by Dr. Charles Orser in conjunction with the Institute for Field Research, and served as a field school for students interested in learning about archaeological field work.

The remains of a small house were uncovered in the site’s north trench. Around two thousand ceramic fragments make up the bulk of the artifacts associated with the house feature, and a cursory visual examination suggests that the ceramics range in date from the medieval period up to the 19th and 20th centuries. This analysis focuses on a representative sample of the post-medieval ceramics, which are the most likely to shed light on rural 17th century life in the region and the most likely to be associated with the Southern-Device family if the site is indeed the location of Malkin Tower. Ceramic analysis is useful in determining site chronology and

function and can provide clues about the lifeways and socioeconomic status of a site's inhabitants (Orser 2002). The Malkin Tower ceramics were analysed by descriptive formal and paste analysis, thin-section petrography, and comparative analysis with the published literature focusing mainly on post-medieval Lancashire and Yorkshire. Additional sources included colonial-era sites in the United States, due to the frequency of imported British ceramics on such sites, which are generally better-studied and reported than sites in England dating to the same time period. The goals of this research were (1) to establish a typology of the Malkin Tower post-medieval ceramics in order to determine what ware or paste types are present at the site and to provide a comparative source for future research in the region, since available literature on post-medieval ceramics, particularly in the Lancashire region, is sparse; (2) to determine the recognizable vessel forms represented within the assemblage, and extrapolate activities from form; and (3) to establish a chronology for the excavated portion of the Malkin Tower site.

Methodology

A representative sample of approximately four hundred artifacts was selected for this analysis. The sample was selected in the field by randomly choosing collection bags from the north trench from the same context but representing various excavation days and units. The sample represents approximately 20% of the material excavated. The sherds were then brought to the Archaeometry Lab at the Oregon State University Radiation Center for analysis. First, they were sorted visually by glaze color and paste appearance to identify preliminary ware categories, where a "ware" is defined as a ceramic type that can be clearly distinguished from other ceramics based on features of the glaze, paste, and vessel forms. Paste photos were taken using a Keyence

digital fiber-optic microscope to get a more detailed view of paste texture and inclusions. The wares were then updated and reorganized based on a comparison of the paste photos.

Several samples from each ware type were selected for thin-section analysis. The thin sections were prepared by Van Petro, Ltd. They were analysed with the goal of identifying the primary inclusions present within the pastes and confirming or altering the ware type categories via petrographic analysis. A total of 21 thin-section slides were examined using a Nikon petrographic scope. Using both plane-polarized light (PPL) and cross-polarised light (XPL), this study recorded (on a qualitative basis) the dominant minerals present and the size, density, and angularity of the inclusions.

A literature review was also undertaken in order to compare the Malkin Tower wares to wares from other archaeological sites as well as to link the Malkin Tower wares to known ware types if possible. The literature review focused mainly on post-medieval Lancashire and Yorkshire, with additional sources from colonial-era sites in the United States due to the frequency of imported British ceramics on such sites, which are generally better studied and reported than sites in England dating to the same time period. References that were heavily consulted but did not ultimately provide matches to the Malkin Tower wares include Stephen Moorhouse and Ian Robert's report on the 1983-86 excavations at the Wrenthorpe potteries (Moorhouse and Roberts 1992) and Ian Robert's report on the 1982-86 excavations at Pontefract Castle (Roberts 2002).

Ware Analysis

The literature on post-medieval ceramics in England is somewhat lacking due to the in general greater interest of English archaeologists in the Bronze, Iron, Celtic, and Roman periods

rather than the medieval and post-medieval ages. As such, it proved difficult to identify the Malkin Tower site wares with any degree of specificity when comparing them to ceramic assemblages reported from English contexts. Fortunately, ceramics very closely resembling the post-medieval Malkin Tower artifacts are well-documented at colonial sites along the eastern seaboard of the United States, since the pre-revolution colonies imported English ceramics along with other resources. As a result of this, one of the most significant comparative sources for this analysis has been the *Diagnostic Artifacts in Maryland*¹ website published by the Maryland Archaeological Conservation Lab in conjunction with the Jefferson Patterson Park and Museum. It is necessary to clarify that the artifacts referred to throughout the paste and ware descriptions as being “from Maryland” were found in colonial American sites but are actually English ceramics that were imported to the colonies, not the other way around.

The analysis identified nine distinct wares, six of which can be linked to published descriptions. The six recorded wares are Buckley-type, Jackfield-type (which has two distinct iterations - an earlier “standard” ware and a later ware, here differentiated as “Pale Jackfield-type”), North Midlands Slipware, Manganese Mottled, and Red Border wares. Parallels in the literature could not be found for the remaining three wares. The six known wares were all primarily produced between the mid-17th and late 18th centuries and had production centers in Yorkshire and Staffordshire.

Buckley-type Ware

Buckley-type ware was produced from the 17th - 19th centuries, and is recorded from at least mid-17th century in northwest England (“Colonial Earthenware Ceramics”). Two

¹ <http://www.jefpat.org/diagnostic/colonialceramics/colonial-earthenware.html>

production sources are known: Wales and Liverpool, which is relatively close to Malkin Tower Farm (Noël Hume 1970). Buckley-type ware is very distinct due to the stripes or layers of two clays (usually red and white). The *Diagnostic Artifacts in Maryland* website, cited in-text as “Colonial Earthenware Ceramics” describes Buckley-type ware as having a brick-red to purplish fabric that can be lighter or darker depending on which of the clays predominates the mix and how well-combined they are, and explain that the layers of clays are usually more pronounced on utilitarian wares and more well-mixed in tablewares. The most common inclusions in the Maryland Buckley-type ware are quartz and grog (“Colonial Earthenware Ceramics”). Vessels generally bear a black glaze, on both interior and exterior. Body sherds frequently have thick walls and distinct rilling, and the rims of large vessels such as storage jars are often bulky and rolled or reinforced (“Colonial Earthenware Ceramics”).

The Buckley-type ware from Malkin Tower Farm closely resembles that recorded above, but the paste contains a greater array of inclusions (clay clumps, grog, iron oxide opaques, occasional rutile or possible augite, polymineralic rock fragments, muscovite, claystone, and possible calcareous clay in addition to high densities of very fine quartz) than reported, or than most of the other ware types in this analysis do. The possible rutile or augite as well as the polymineralic rock fragments (probably sandstone) are unique to the Buckley-type wares. This differs somewhat from the Malkin Tower Buckley-type wares, which contain a greater array of inclusions previously listed. Other attributes, such as glaze and form, appear identical, providing a secure identification of this ware.

While stripes of red and white clay are characteristic of Buckley-type ware, they are not exclusive to it; blending two or more clays together was a common technique to make difficult

clays more workable in regions that lacked access to high-quality sources (Noël Hume 1970). Brears (1971) mentions a 17th century Staffordshire potter who mixed a dull white clay with a red clay for use in their blackwares, but does not mention the striped appearance, so it is unlikely to be the same ware. Bingham Heritage Trails Association also mentions several types of post-medieval black-glazed redwares. Their Coarse Black ware may be related to Buckley-type ware, but the Bingham ware in general shows fewer body sherds with heavy rilling, which is characteristic of the Malkin Tower Buckley-type, and although similar rim forms occur in the Bingham assemblage, the reinforced rims common in the Malkin Tower assemblage are missing and the Bingham wares lack the layers of red and white clay evident in most of the Malkin Tower Buckley-type wares (Potts). Most of Bingham's other blackwares are much more sandy than the Malkin Tower ones, and although some of the Bingham wares occasionally demonstrate streaks of lighter and darker clays in the fabric, they are unlikely to be a match for the Malkin Tower wares due to the common occurrence of feldspar and sand in the Bingham ware pastes (Potts), which are not present in any of the Malkin Tower pastes.

Jackfield-type Ware

Jackfield-type wares are thin-walled vessels with dark red to purplish pastes and a shiny black glaze typically on both the interior and exterior surfaces ("Colonial Earthenware Ceramics"; Noël Hume 1970, 123). Jackfield ware developed in the mid-18th century and was produced for a period of about 45 years. During this period, Shropshire Jackfield had purple or purplish grey body and deep black glaze, and Staffordshire Jackford had a deep red body and black glaze (Noël Hume 1970). Tea and coffee services are the most common form for

Jackfield-type wares (“Colonial Earthenware Ceramics”). Both Shropshire and Staffordshire are located in the midlands.

The Malkin Tower Jackfield-type wares fall into two categories: the standard dark red-bodied variant that closely matches Noël Hume’s (1970) description of the ware, herein labeled Jackfield-type ware, and a pale brown-bodied variant which superficially resembles the Maryland Jackfield-type wares (which have a much paler fabric than Noël Hume’s Staffordshire Jackfield wares) but contains red and white inclusions visible to the naked eye which are lacking in the Maryland artifacts, herein labeled Pale Jackfield-type ware. The Pale Jackfield-type ware is unique in the Malkin Tower assemblage in containing clay pellets and a possible calcareous clay in the matrix. No other ware resembling the Malkin Tower Pale Jackfield-type wares was found in the literature consulted. The Malkin Tower Jackfield-type ware resembles the Staffordshire Jackfield ware more closely, due to its dark red fabric. *Diagnostic Artifacts in Maryland* notes that Jackfield ware experienced a revival in the late 19th century, during which time it was produced with a white or orange body (“Colonial Earthenware Ceramics”). The Malkin Tower Pale Jackfield-type described below might be a variant of this revival, but the density and size of the inclusions would be highly unusual for a 19th century Staffordshire paste. It is more likely to be a light-bodied variant of the earlier red-bodied Jackfield, although if it is, it was not discussed in the literature consulted.

Faint stripes of white or yellow resembling the Buckley-type stripes are sometimes visible in the fabric of the Malkin Tower Jackfield-type wares; this may be coincidental or it may indicate a relationship between the Malkin Tower Jackfield and Buckley types. Noël Hume (1970, 132) explains that clay-blending, while sometimes ornamental (e.g. agate wares), was also

often a way to combine two or more subpar clays to make a more workable clay. Stripes could sometimes be left in the fabric depending on how thoroughly mixed the clays were. Buckley wares tend to be more finely mixed and the striations less evident in the fabric of tableware forms than utilitarian forms (“Colonial Earthenware Ceramics”), so it is conceivable that the dark red Jackfield-type is actually an extension of Buckley-type ware; however, it seems to more closely resemble true Jackfield.

North Midlands Slipware

North Midlands Slipware was produced from the last half of the 17th century up to the early 20th century. It was in production in Staffordshire by the mid-17th century, and its popularity began to decline after the 1720s, although it continued to be produced. Toft ware (a well-known style of “jeweled” slipware) was in production by the 1660s and was made until the 1720s (“Colonial Earthenware Ceramics”). North Midlands Slipwares were primarily produced in Staffordshire and other areas of the North Midlands, and because of this it is also sometimes known as Staffordshire Slipware (“Colonial Earthenware Ceramics”).

The slipware found at Malkin Tower closely resembles that found in Maryland as well as that reported in Brears (1971) and Noël Hume (1970). The Maryland slipwares are described as thin, buff-bodied wares coated with white or dark slips and then decorated. Standard North Midlands Slipware (sometimes known as Staffordshire Slipware) is generally slipped in yellow and then decorated with a dark slip, but on some vessels the slips are reversed, meaning the vessel is coated all over with the dark slip and then decorated with white or yellow designs (Brears 1971, 45-47; Colonial Earthenware Ceramics”; Noël Hume 1970, 135). It is worth noting that Bingham Heritage Trails Association identifies these different decorative styles as separate

variants of the ware: Slip-Trailed ware, characterised by yellow slip designs over a light brown background; Staffordshire Slipware, characterised by yellow and brown designs; and Black Slipware, which resembles Brears' and Noël Hume's "reverse"-decorated slipwares (Potts). Brears (1971) and Noël Hume (1970) lump all three variants together under the heading "Staffordshire" Slipware. This analysis follows the example of *Diagnostic Artifacts in Maryland* in lumping all three together under the name "North Midlands" Slipware because it more accurately represents the known geographic area in which the wares were produced ("Colonial Earthenware Ceramics").

The majority of sherds from the Malkin Tower site are slipped in yellow and decorated with white or black, but one reverse-slipped sherd was also found, which is glazed in dark brown and decorated with white. One sherd from Malkin Tower resembles Toft ware. Toft ware and other "jewelled" slipwares were typically ornamental, but utilitarian trailed vessels in this style were generally accessible by most economic classes ("Colonial Earthenware Ceramics"). Brears (1971) adds that while Toft-type wares were primarily ornamental, they were "unsophisticated" and the intended market was the "average" household rather than these wares being exclusively accessible by the wealthy (46).

Manganese Mottled and Red Border Wares

Diagnostic Artifacts in Maryland dates Manganese Mottled ware to at least the mid-1670s to the late 18th century. It was produced in Staffordshire and Yorkshire as well as other potteries in northern England, in addition to a production center in Buckley, Wales. The terms "Manganese Mottled" ware and "Mottled" ware are interchangeable ("Colonial Earthenware Ceramics"). It should also be noted that "Manganese" is a misnomer; the speckles

and streaks are more likely caused by iron or some other inclusion (“Colonial Earthenware Ceramics”).

Border wares are somewhat earlier, dating to anywhere between the late 15th to early 18th centuries. Bowls, drinking jugs, and porringers were produced during the early 17th century, but *Diagnostic Artifacts in Maryland* notes that these forms are atypical of Red Border wares during this time, although by the mid 17th century Red Border wares are found in the same forms as standard Border wares and the ware is a somewhat ubiquitous household ware (“Colonial Earthenware Ceramics”). Border wares were produced much farther to the south than most of the other known wares from Malkin Tower, being generally associated with the Surrey-Hampshire border (Pearce 1992). It is also significant that standard Border wares, which generally have a white fabric and green or yellow glaze, have not been found on the Malkin Tower site.

Manganese Mottled wares and Red Border wares are somewhat difficult to distinguish. Both are characterised by moderately sorted subangular very fine quartz grains, with larger grains up to 0.45 - 0.5 mm. Inclusions of grog, claystone, iron oxide opaques, and fine grains of muscovite also occur in both wares in similar sizes and quantities. The main differences are that the matrix in the Manganese Mottled ware may be a calcareous clay (high density of silty grains with high interference colors) and Red Border ware has a higher density of quartz. Bingham Heritage Trails Association mentions “mottled” wares on their site and describe them as having a glaze which ranges in color from yellow to dark brown and is speckled or streaked with dark brown and black (Potts). It is likely that these are very similar wares to the Malkin Tower and Maryland wares.

Other Wares

The remaining sherd groups do not match any known ware types described in the literature consulted. They are here labelled Matte Caramel-Glazed Redwares, Striated Brown-Glazed Sandy wares, and Black-Glazed Sandy wares. The Matte Caramel-Glazed Redwares in particular do not resemble any other ware type from the site, with the combination of silty, very fine, and fine quartz and amorphous clumps of clay. In general, the inclusions are more angular and less well-sorted than in any of the other wares and the matrix appears to be a darker red than any of the other wares. It may be a variant of Red Border ware; Jacqueline Pearce describes Red Border ware as having a wide range of fabric colors, but most commonly pale brick-red to reddish yellow. Typical inclusions are moderate subrounded to angular fine quartz with sparse iron oxide or iron-stained inclusions and mica along with clay pellets (Pearce 1992, 4).

The Striated Brown-Glazed Sandy wares have a mottled glaze in shades of light-to-dark brown which tends to alternate horizontal stripes. The paste is a sandy brown to red characterised in thin-section by a moderate density of very fine quartz and closely resembles the North Midlands Slipware thin-section. Both are characterised by subangular very fine quartz inclusions and lack the other inclusions (mainly grog, claystone, and muscovite) which commonly occur in other ware types found at Malkin Tower; however, the two ware types are distinguished by their glazes. The glaze on the Striated Brown wares does not match any recorded form of North Midlands Slipware and completely lacks piped or molded decoration.

The Black-Glazed Sandy ware is the least-represented ware type, with only one sherd. It has a sandy brown fabric with a matte black glaze on the interior and exterior. It was not thin-sectioned. It is thin-walled and may be part of a vessel shoulder.

Ware Descriptions

Group Name: Buckley-type ware

Identifying Attributes: Brick-red fabric with white stripes visible to the naked eye and a thick, glossy black glaze most commonly on both the interior and exterior surfaces. Thick with substantial rilling on most sherds, which is typical of utilitarian Buckley ware (Noël Hume 1970).

Paste and Firing: Paste ranges from grey to brick-red to pinkish buff. The grey fabrics are unevenly oxidized and several of the sherds are redder around the edges, suggesting that the grey fabrics are likely underfired examples of the red fabrics, or were fired in a reduced environment. In thin section analysis, the fabrics appear dark and contain a sparse amount of silty/very fine sand quartz. The white stripes show up very brightly and appear to be composed of a much more quartz-rich clay. In thin-section, most of the quartz is silty to very fine sand grain size, providing the homogenous appearance of the stripes, although larger inclusions up to 0.35 mm do occur as well as occasional claystone inclusions up to 0.25 mm. Larger chunks of grog as well as patches of iron oxide occur as well along with small sparse grains of muscovite. The stripes may be a calcareous clay with a high density of silty quartz based on the appearance of having a soft yellow/white glow under XPL. Larger quartz inclusions may occur as individual grains or within polymineralic rock fragments. *Diagnostic Artifacts in Maryland* explains that the striations of the two clay types are generally more obvious on utilitarian wares whereas the clays are more

generally more thoroughly mixed in tablewares. The paste is generally brick-red with stripes of the white clay, but may be darker red or much paler depending on which of the clays predominates in the mix and how well-combined they are (“Colonial Earthenware Ceramics”).

Surface Finish and Decoration: Glaze tends to be a glossy black on both interior and exterior surfaces, although some sherds in this assemblage have only one surface glazed and one has a caramel (medium brown) glaze. Per *Diagnostic Artifacts in Maryland* some sherds may have a brown glaze rather than the normal black as a result of underfiring or using a clear lead glaze instead (“Colonial Earthenware Ceramics”). The black-glazed pieces are rilled. Bottoms of bases have grooves from being cut with wires.

Forms and Dimensions: *Diagnostic Artifacts in Maryland* and Noël Hume (1970) list the typical forms for Buckley-wyde ware as utilitarian vessels including large storage jars, pancheons or milk-pans, butterpots, and cooking pots. Storage jars and milk-pans are the most common (Noël Hume 1970, 133). The Malkin Tower Buckley-type wares reflect this tendency.

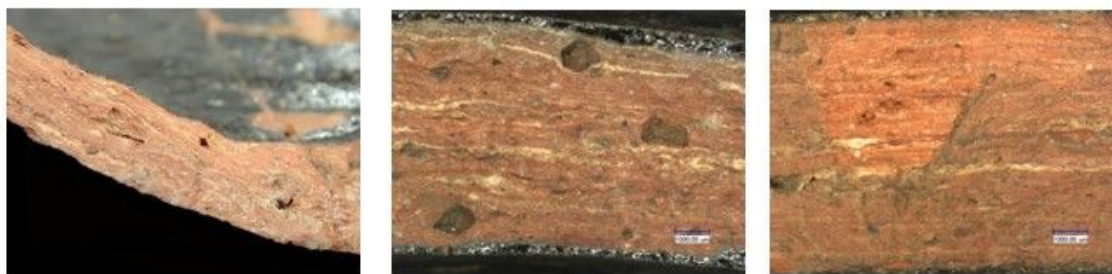
Five reinforced rims (two measuring 28 cms in diameter, two measuring 38 cms in diameter, and one measuring 43 cm in diameter) are probably from large storage jars. The reinforced (“double-chin”) rims closely resemble the rims that can be seen on a typical Buckley storage jar (Noël Hume 1970, 135). One square everted rim (with a 31 cm diameter), has a near-vertical wall suggesting it is variant of the storage jar form.

Two everted rims with shallow grooves or dips on their top surface (measuring 27 cm and 29 cm in diameter) likely come from pancheons or milk-pans based on the angle of the vessel walls, which are more out-sloping than storage jar walls. Eight basal angles and one string-cut base probably also represent large storage jars or pancheons/milk-pans. All basal

angles are approximately 55°. The bases are flat-based, have out-sloping walls and are thickened at the basal angle but not footed. Obvious rilling occurs on the walls. The bases are glazed on the interior and rarely on the exterior. Several large body sherds with obvious rilling are glazed on both the interior and exterior.

Several smaller vessel forms occur in this ware, including cups, tygs, bowls, and pitchers (“Colonial Earthenware Ceramics”). At the Malkin Tower site three possible lids or shallow, plate-like vessels, were found, which are glazed on the interior only and have an 18 cm diameter. They are slightly bolstered or thickened inside the lip. One fairly fine strap handle was also found, which is probably from a drinking vessel or pitcher, as well as two everted rims from small, thin-walled vessels, potentially small bowls. The rims are glazed on both the interior and exterior. One has a 19 cm diameter; the other is too small to get an accurate measurement from.

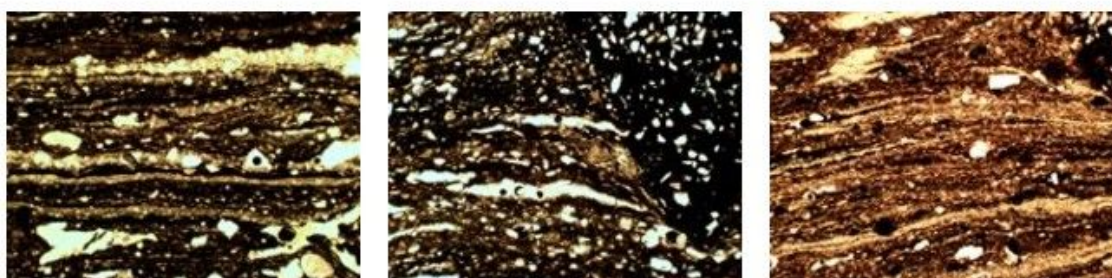
Buckley-type Ware



Paste photo from *Diagnostic Artifacts in Maryland*, left; paste photos from Malkin Tower, right.



Additional Malkin Tower paste photos demonstrating the range of variation in firing and clay mixing.



Malkin Tower Buckley-type wares in thin-section (all PPL). The red stripes are formed of a reddish matrix with a moderate density of very fine quartz and other inclusions, while the white stripes have a much higher density of very fine quartz grains.



Buckley-type sherd from Maryland ("Colonial Earthenware Ceramics" showing the characteristic rills, left; similar sherds from Malkin Tower, center and right.



Clockwise: Buckley storage jar (Noël Hume 1970, 135), Buckley-type rims from Maryland ("Colonial Earthenware Ceramics"), Buckley-type reinforced rims from Malkin Tower (top right, lower left, and lower center).



Butterpot rim , milkpan rims, and basin from *Diagnostic Artifacts in Maryland*, top row; similar Malkin Tower rims, bottom row.

Group Name: Jackfield-type ware

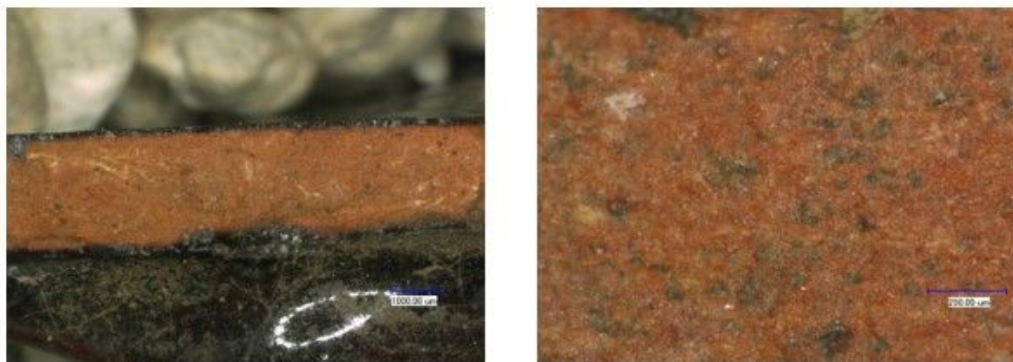
Identifying Attributes: Thin-walled vessels with a dark red to purplish fabric and shiny black glaze.

Paste and Firing: Paste is dark red to purplish and contains a moderate density of subrounded to subangular quartz. Faint stripes of white or yellow resembling the Buckley-type stripes are sometimes visible in the fabric.

Surface Finish and Decoration: All sherds are glazed interior and exterior with a shiny black glaze. There is no decoration on any of the sherds. Noël Hume (1970) and Diagnostic Artifacts in Maryland note that Jackfield ware can sometimes be decorated with white sprigging or molding, but is also often left undecorated.

Forms and Dimensions: Most vessels are probably pitchers or cups. According to Noël Hume (1970) coffee and tea services are the most common vessel type for Jackfield ware. In this assemblage, the following were encountered: Four thin-walled vessels with everted rims, ranging from slightly everted to strongly everted. One measures 15 cm in diameter, the other pieces are too small to get accurate readings from. All are glazed interior and exterior. Two simple/direct rims were also found, one measuring 9 cm in diameter and the other is too small to measure. Both are glazed interior and exterior. One curved handle with a portion of the vessel wall was encountered, and is glazed on all surfaces including along the interior of the wall. Two rolled or thickened basal angles were found, both glazed on the interior only but the glaze likely extended partially down the vessel exteriors as evidenced by drips on the exterior surfaces.

Jackfield-type Ware



Paste photos of Malkin Tower Jackfield-type.



Malkin Tower Jackfield-type everted rims.



Jackfield-type handle found at Malkin Tower., left; handle from *Diagnostic Artifacts in Maryland*, right.



Malkin Tower Jackfield-type flat bases, left; slightly curved string-cut base, top right; basal angle, lower left; and basal angle from *Diagnostic Artifacts in Maryland* for comparison, right.



Jackfield-type teapot from
*Diagnostic Artifacts in
Maryland.*



Jackfield teapot and pitcher (Noël Hume
1970, 124).

Group Name: Pale Jackfield-type ware

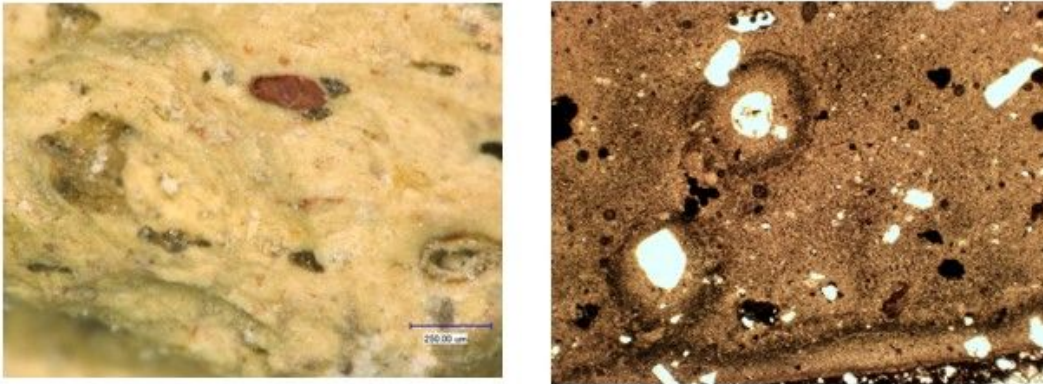
Identifying Attributes: Thin-walled vessels with a pale brown fabric and shiny black glaze and red and yellow inclusions.

Paste and Firing: The paste is pale brown and contains red and yellow inclusions visible to the naked eye. It contains primarily very fine angular quartz grains along with some rounded to subrounded quartz in the fine sand range in addition to larger iron oxide opaques (0.05 mm) and clay pellets (0.7 - 1 mm). Clay pellets occur around quartz grains or voids.

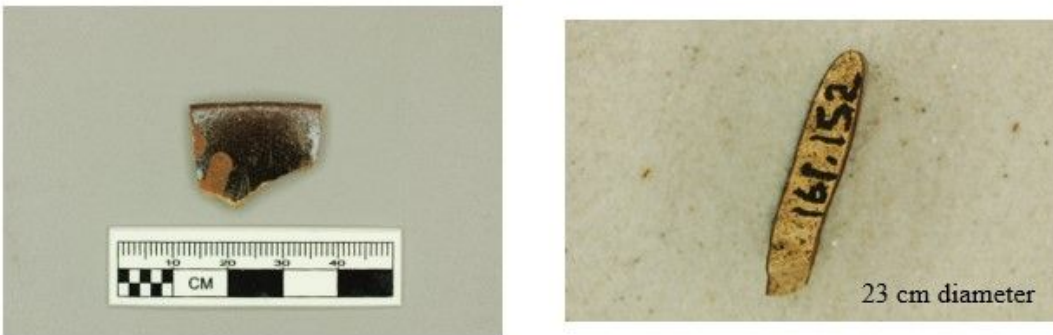
Surface Finish and Decoration: A shiny, thin black glaze on the interior and exterior. No decoration.

Forms and Dimensions: Like the earlier red-bodied Jackfield-type, this ware was primarily produced as tea and coffee services (“Colonial Earthenware Ceramics”). Two rims and one strap handle are present in the Malkin Tower sample. The rims are thin-walled and glazed on both the interior and exterior. One has a diameter of 23 cm. The other was thin-sectioned. The rims and handle are probably all from a pitcher.

Pale Jackfield-type Ware



Pale Jackfield-type paste photo and thin-section (PPL) photo from the Malkin Tower artifacts.



Malkin Tower Pale Jackfield-type rim interior and profile.



Jackfield-type paste photo from *Diagnostic Artifacts in Maryland*. The Malkin Tower Pale Jackfield-type ware has a much less homogenous paste than the Maryland Jackfield-type but occurs in similar forms with a similar glaze.

Group Name: North Midlands Slipware

Identifying Attributes: Sandy orange fabric with a black glaze decorated with yellow slip trailed decoration on the exterior and glazed red/black (clear but over a red slip?) ombre. Some pieces are glazed black on the exterior and red/black ombre on the inside but do not show the yellow decoration. They are included in this ware type on the assumption that they come from an undecorated part of the vessel, given the otherwise very similar red-black ombre glaze and fabric to the decorated pieces. The dark background with yellow decoration is actually known as reverse-decorated slipware, since North Midlands slipware was typically glazed yellow and then decorated with black, brown, or white (“Colonial Earthenware Ceramics”). Some of the decorated sherds are yellow with white or brown decoration.

Paste and Firing: Sandy orange fabric. Fairly homogenous orangey paste with a moderate density of rounded to subangular very fine sand quartz grains and a few larger grains up to 0.05 mm.

Surface Finish and Decoration: Reverse-decorated examples, the most common in this assemblage, are glazed with a black-red ombre usually on the interior and solid black glaze on the exterior. One reverse-decorated sherd, which was thin-sectioned, had a characteristic stripe of yellow slipped decoration. Most remaining sherds have a yellow slip with dark brown, black or white decorations, which is considered to be normal North Midlands slipware (“Colonial Earthenware Ceramics”), including one sherd of “jewelled” slipware, a decorative technique mastered by Thomas Toft (but not exclusive to Toft wares) in which the vessel was slipped in yellow, decoration was trailed on in a dark slip, and drops of stiff white slip were applied to the center of dark lines in order to create a “sparkly” effect (Brears 1971, 46). One sherd, which was

also thin-sectioned, is glazed in light brown with a stripe of yellow slipped decoration. The remainder of the sherds do not show distinctive decorative aspects.

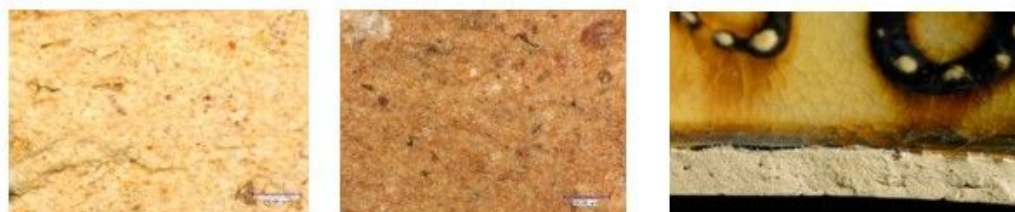
Forms and Dimensions: The most common forms for this ware are cups, tygs, mugs, decorative dishes and plates, and other table and ornamental wares (“Colonial Earthenware Ceramics”).

The identifiable forms in the Malkin Tower sample include one flat rim slipped in yellow and brown along outer edge and partially along upper (interior) surface, indicating it is probably a flat vessel such as an ornamental plate, with a diameter of 25 cm; one basal angle (50°) with a curving, out-sloping wall, glazed black on the interior and mottled black/dark red on the exterior, probably from a globular mug or shallow bowl, and two flat bases, glazed on the interior only in mottled black and red.

North Midlands Slipware



Malkin Tower North Midlands slipwares, top row; North Midlands slipwares from Maryland showing a similar range of variation in glazes and decorations ("Colonial Earthenware Ceramics"), bottom row.



Paste photos of Malkin Tower slipwares (under PPL), left and center; paste photo from *Diagnostic Artifacts in Maryland*, right.



Malkin Tower "jeweled" slipware showing the characteristic yellow glaze with decorations in brown and "sparkles" dotted on in white.



"Jeweled" slipware from *Diagnostic Artifacts in Maryland*.



Toft "jeweled" slipware plate (Brears 1971, 51).

Group Name: Manganese Mottled ware

Identifying Attributes: Light orange to pale yellow paste with a mottled glaze. The glaze appears to be a medium orangey-brown streaked or spotted with dark brown or black. The appearance is fairly similar to some Red Border ware and in cases with similar glazes the two ware types seem to be distinguishable mainly by paste.

Paste and Firing: Paste is light yellow to orangey and contains rounded yellow and red inclusions visible to the naked eye. Contains a moderate density of subrounded to subangular very fine quartz grains ranging in size from 0.5 - 0.15 mm, along with some larger claystone inclusions, iron oxide opaques, and small grains of muscovite.

Surface Finish and Decoration: Mottled glaze usually on both interior and exterior surfaces. Glaze may be a lighter orange, medium caramel brown, or dark red and is speckled or streaked with dark brown/black. The mottling on horizontal surfaces (the interiors of bases) is usually speckled while vertical surfaces (vessel walls) are usually streaked, and the glaze tends to be darker in areas where it pools (“Colonial Earthenware Ceramics”), such as in basal angles.

Forms and Dimensions: Typical forms for this ware vary widely, ranging from tankards, mugs, cups, and other tablewares to large bowls and dishes (“Colonial Earthenware Ceramics”).

Ten basal angles (two at 35°, one at 40°, three at 60°, three at 80°, and one which was thin-sectioned) with out-sloping walls, slightly thickened at the basal angles but not footed, were found. The shallower angles (35°) are shallow, open dishes, and are glazed on the interior only. The other shallow angle (40°) is slightly more rounded in the wall, indicating that it is likely from a globular mug or bowl, and is glazed on the interior only but slipped on exterior. Moderate angles (60°) are probably pitcher or bowl bases, and are glazed on both the interior and exterior

surfaces. Two are sooted externally. Steep angles (80°) are likely from vertical mugs; these are glazed on the interior and partially down exterior, and are rolled or reinforced at the basal angle with slight incised lines around base just above the basal angle. Five flat base sherds are glazed on the interior only and sooted externally.

One strap handle, probably from a pitcher, was also found. Five rims, one of which was thin-sectioned, are thin-walled, glazed on both the interior and exterior, are all too small to get accurate measurements from. They are possibly from globular or vertical mugs or pitchers.

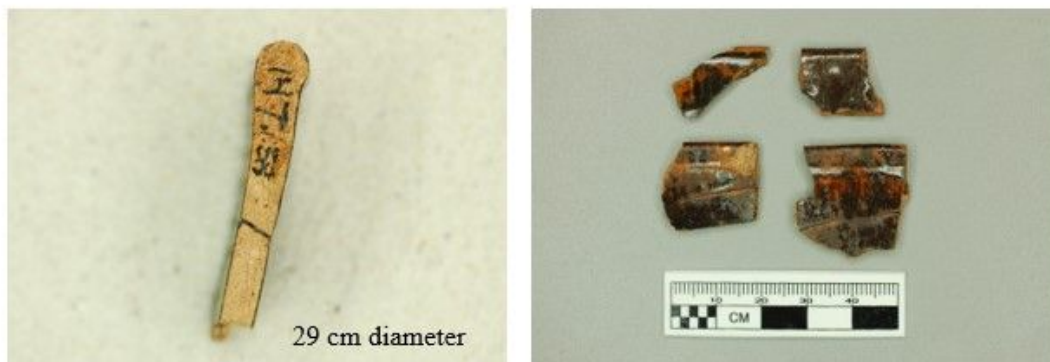
Manganese Mottled Ware



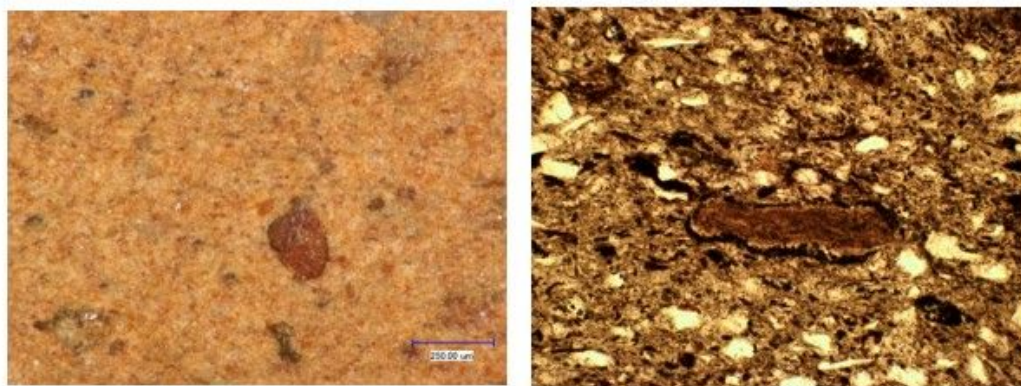
Malkin Tower Manganese Mottled base profiles and interiors. The base at left shows the deeper coloration of glaze just inside the basal angle that results from pooling.



Bases from *Diagnostic Artifacts in Maryland*. The base at left shows glaze pooling. The vessel at right is a globular cup or mug.



Rims from Malkin Tower.



Paste photo and thin-section photo (PPL) from Malkin Tower.

Group Name: Red Border ware

Identifying Attributes: Paste is a light orangey-red. Red glaze sometimes speckled with dark brown. Somewhat difficult to distinguish from Manganese Mottled Ware, but the two can generally be distinguished based on differences in the paste composition evident in thin section, and sometimes based on glaze - Manganese Mottled ware is characterised by the presence of dark stripes and/or speckles in the orange or red glaze. While manganese speckles can occur in the glaze of Red Border ware, it is not always present.

Paste and Firing: Paste is orangey-red and contains a high density of subangular very fine sand quartz grains, with larger grains up to 0.5 mm and occasional inclusion of grog, claystone, or muscovite.

Surface Finish and Decoration: Red or mottled red glaze sometimes on both the interior and exterior and sometimes on the interior only. Some unglazed. *Diagnostic Artifacts in Maryland* indicates that Border wares are generally only glazed on the interior (“Colonial Earthenware Ceramics”).

Forms and Dimensions: The most common forms for Red Border wares are flanged dishes, wide/deep bowls, drinking jugs, single-handled tripod pipkins, pitchers, cups, mugs, tankards, bowls, porringers, colanders, and chamber pots (“Colonial Earthenware Ceramics”).

One flat rim from a flanged dish was found with a diameter of 27 cm. It is glazed on the interior and just over the lip on the exterior and has a slight bulge just inside lip. Pearce (1992, 9) confirms that flanged dish rim diameters range from 21 - 44 cm and are generally glazed on the interior and just over the lip edge onto the exterior.

Two basal angles are also present. One is glazed on the interior and is unglazed exterior except for a drip of glaze. It has a vertical wall, angled at 70° , with a slightly thickened or reinforced basal angle, but is not footed; probably a cup or goblet. The other, which was thin-sectioned, was glazed on the interior and partially down the exterior, with a rolled or thickened basal angle and curved out-sloping wall, was probably from a globular mug. One handle, mostly unglazed but with patches or drips of glaze on the outer surface, may be from a pitcher or drinking jug.

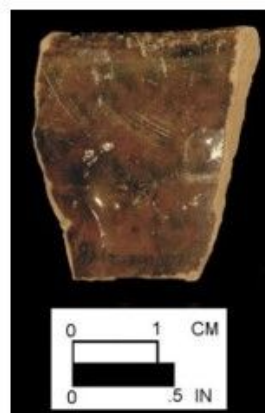
Red Border Ware



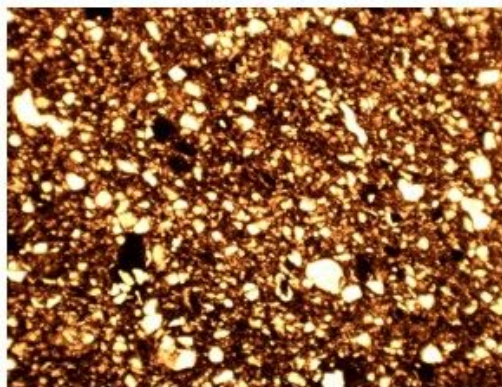
Malkin Tower Red Border ware base, interior and profile, possibly from a globular drinking jug.



Flanged dish rim from Malkin Tower.



Red Border ware mug rim from *Diagnostic Artifacts in Maryland*.



Thin-section photo (PPL) and paste photo from Malkin Tower. The vessel in the paste photo was heavily suited even after making a fresh break, possibly from being used to heat food or drink (Pearce 1992).

Group Name: Matte Caramel-Glazed Redwares

Identifying Attributes: Orangey to brick-red fabric with white inclusions visible to the naked eye. May be unglazed or have a matte caramel glaze mottled with yellow.

Paste and Firing: Brick red fabric with visible angular to subangular white inclusions of very fine to fine sand quartz and occasional amorphous clumps of clay.

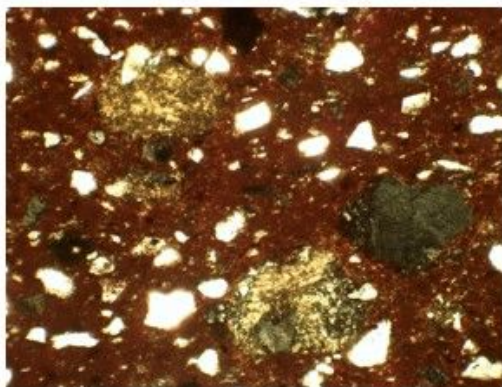
Surface Finish and Decoration: Sometimes unglazed, sometimes a mottled matte caramel glaze.

Forms and Dimensions: This ware could not be identified in the literature, and therefore no expected forms could be predicted. The following forms were identified: one everted rim, unglazed except for a strip of glaze just inside the lip on the interior, is too small to measure. One possible rim lip was found as well, but the sherd is too small and weathered to be sure. It is completely unglazed. One basal angle, out-sloping at 40°, was found. It is glazed on the interior only and is string-cut. It probably comes from a bowl or other shallow dish.

Matte Caramel Redwares



Paste photos from Malkin Tower.



Thin-section photo (XPL).



Everted rim from an unidentified vessel.



Basal angle and body sherds from Malkin Tower. No similar ware was found in the literature consulted.

Group Name: Striated Brown-Glazed Sandy ware

Identifying Attributes: Pale brown fabric glazed on interior and exterior surfaces. Glaze is striated or mottled with red, yellow, and dark brown. May be a variant of Manganese Mottled Ware, but lacks the characteristic dark streaks/specks.

Paste and Firing: Pale brown paste. Moderate to high density of subrounded to subangular very fine quartz grains.

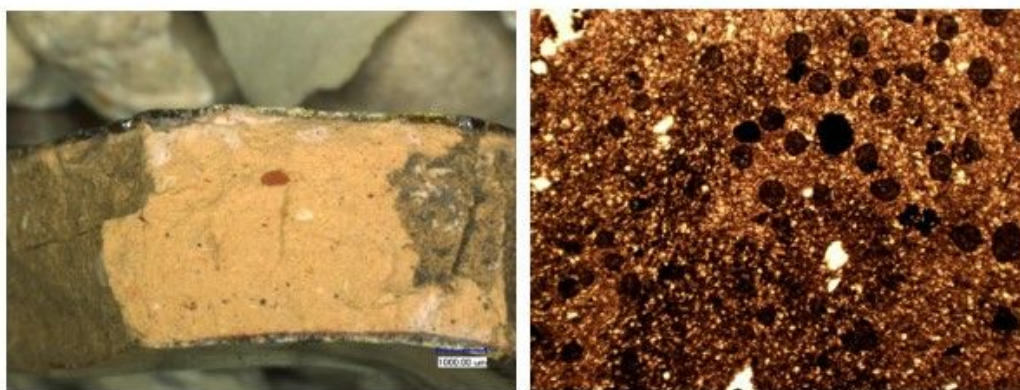
Surface Finish and Decoration: Red glaze striated or mottled with yellow and brown. Possibly a single glaze that achieves the various colors based on how thickly it pools or spreads on the vessel.

Forms and Dimensions: The expected forms for this ware are unknown since the ware could not be identified with the literature. One everted rim is present, glazed on both the interior and exterior. The glaze is a darker brown on exterior than the interior. The sherd is too small to accurately measure the rim diameter. It is thin-walled and slightly everted. One thin-walled handle was found as well, glazed on the interior and exterior. One body sherd, glazed interior and exterior, may be a pitcher shoulder.

Striated Brown Sandy Ware



Body sherds from Malkin Tower. No rims or bases were present in this ware type and no vessel forms could be identified.



Paste photo and thin-section (PPL) photo.

Group Name: Black-Glazed Sandy ware

Identifying Attributes: Only one sherd of this ware was found. It has a matte black or dark brown glaze interior and exterior and a sandy brown fabric with rounded white inclusions visible to the naked eye.

Paste and Firing: This sherd was not thin-sectioned. It has a sandy light brown fabric with visible rounded white inclusions.

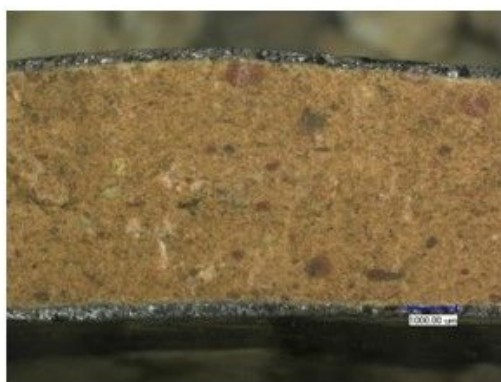
Surface Finish and Decoration: Matte black or dark brown glaze interior and exterior. One unglazed patch on the exterior.

Forms and Dimensions: The sherd may be a pitcher shoulder.

Black-Glazed Sandy Ware



Exterior and interior surfaces of the sherd.



Paste photo.

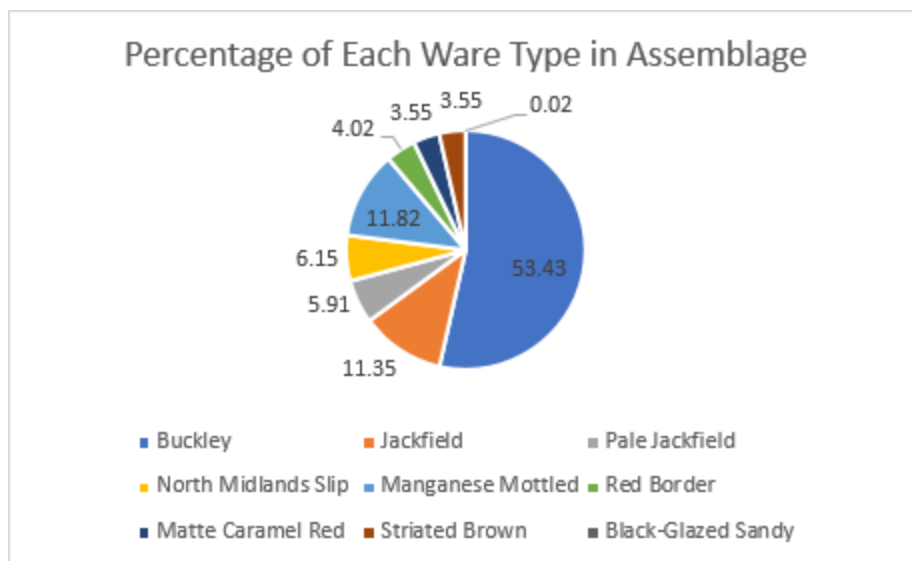


Figure 1. Chart showing the relative abundance of each ware type in the Malkin Tower assemblage in terms of total number of sherds.

Form Analysis

Pantheons and storage jars only occur in Buckley-type ware, while pitchers occur in nearly all of the Malkin Tower wares, with the exception of North Midlands Slipware and Matte Caramel Redwares. The only identifiable form in the Matte Caramel Redwares is a shallow dish of some sort. The identifiable forms of North Midlands Slipware are a plate and a globular mug. Both the Jackfield and Pale Jackfield wares consist of pitchers and perhaps teapots, which is characteristic of Jackfield ware (Noël Hume 1970). Manganese Mottled wares occur as shallow dishes, globular mugs, vertical mugs, and pitchers. Red Border ware occurs as a flanged dish, a cup, a pitcher, and a globular mug. These forms imply that the activities being carried out at the site were primarily related to the storage and consumption of food and drink, which seems reasonable for a household. Forms that would be expected for these wares that are not present are tygs, pipkins, chamber pots, and cooking pots (“Colonial Earthenware Ceramics”). It is unclear why these forms would not be present in the Malkin Tower assemblage. Possible reasons include: perhaps the wares present at the site did not exist in those forms during the time period

represented, or perhaps they have not survived in a recognizable condition. It is also possible that if the site was the home of a rural, lower-class family, they may not have had access to certain types of vessels that were potentially more specialized or costly to produce. It is also possible that while those forms exist in these wares in other regions, they were not commonly in use in Lancashire during the post-medieval period. The apparent lack of certain forms may also be due to a sampling error, which further analysis of the entire Malkin Tower ceramic assemblage could confirm. Dr. Orser has also suggested that rather than a house, the site may be a tavern dump-site.

Implications for Site Chronology

Based on known dates of manufacture of these various wares (Fig. 2), we can make estimates of when the site was occupied. Buckley ware was produced in Wales and northwest England from the 17th - 19th centuries, and the vessel forms remained fairly stable throughout that time period ("Colonial Earthenware Ceramics"). Jackfield was produced in a purple or red fabric from 1745 - 1790 (Noël Hume 1970) and again in the late 19th century with a white or orange fabric ("Colonial Earthenware Ceramics"). Throughout its production, Jackfield wares have primarily been produced as tea wares and pitchers ("Colonial Earthenware Ceramics"; Noël Hume 1970), which aligns with the wares found at the Malkin Tower site. Border wares date from the late 15th century to the early 18th century and typically occur as flanged dishes, deep bowls, drinking jugs, and pipkins (Colonial Earthenware Ceramics"). Pearce (1992) claims that Red Border ware flanged dishes have been found in contexts which date to the mid-to-late 17th century, and dates a Red Border globular drinking vessel unearthed in London to the early 17th century.

Approximate Production Date Ranges for Known Ware Types

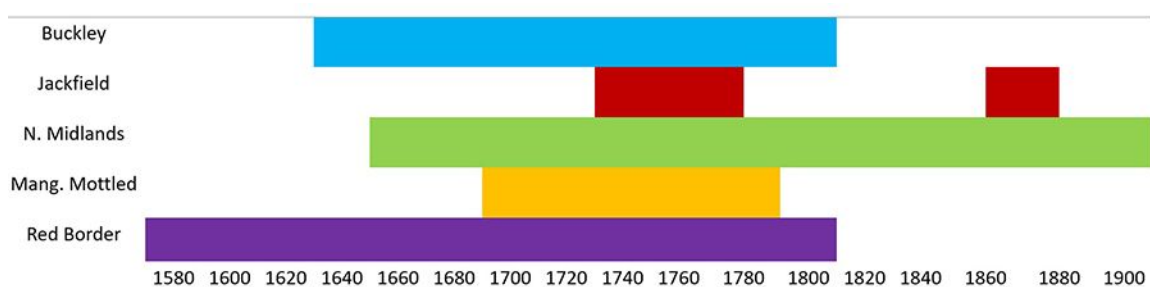


Figure 2. Chart showing approximate production periods for known wares. Dates taken from *Diagnostic Artifacts in Maryland* and Noel Hume 1970.

The recorded production dates for the identified ware types suggest that the excavated portion of the site is too late to be Malkin Tower. The majority of these wares were produced primarily during the late 17th and early 18th centuries, although Jackfield-type and Pale Jackfield-type were not developed until the late 18th century. The Pendle Hill Witches were executed in 1612, nearly half a century earlier than production for most of the wares began. Red Border wares are the only exception, having been in production since the late 16th century (Pearce 1992); however, the Border ware forms identified in the Malkin Tower assemblage did not begin to be produced in the Red Border ware variant until much later (Pearce 1992).

This does not necessarily preclude the site as a candidate for the location of Malkin Tower. It is generally suspected that the house would have been destroyed following the guilty verdict and execution, but it is also entirely possible that the site continued to be occupied by other poor, rural families. In that case, there may be another, earlier occupation level underneath the 17th - 19th century deposit that will be uncovered during the 2019 excavation season. If an earlier occupation is found, this study will be useful in terms of establishing a typology for the

mid-to-late 17th century ceramics which can be used to establish a relative date for earlier contexts as approximately pre-1650 (since that is the earliest that most of the wares identified in this study would have been in production), and to provide a comparative resource with which to isolate any 17th century ceramics that may be uncovered during the excavation. It is also important to note that the trench dug during the 2018 excavation is fairly shallow, and due to the field's continued use as a farm for at least the few centuries, plowing has certainly affected the stratigraphy of the site and caused some mixing of contexts, which might account for the presence of the much later Jackfield and Pale Jackfield wares in this assemblage.

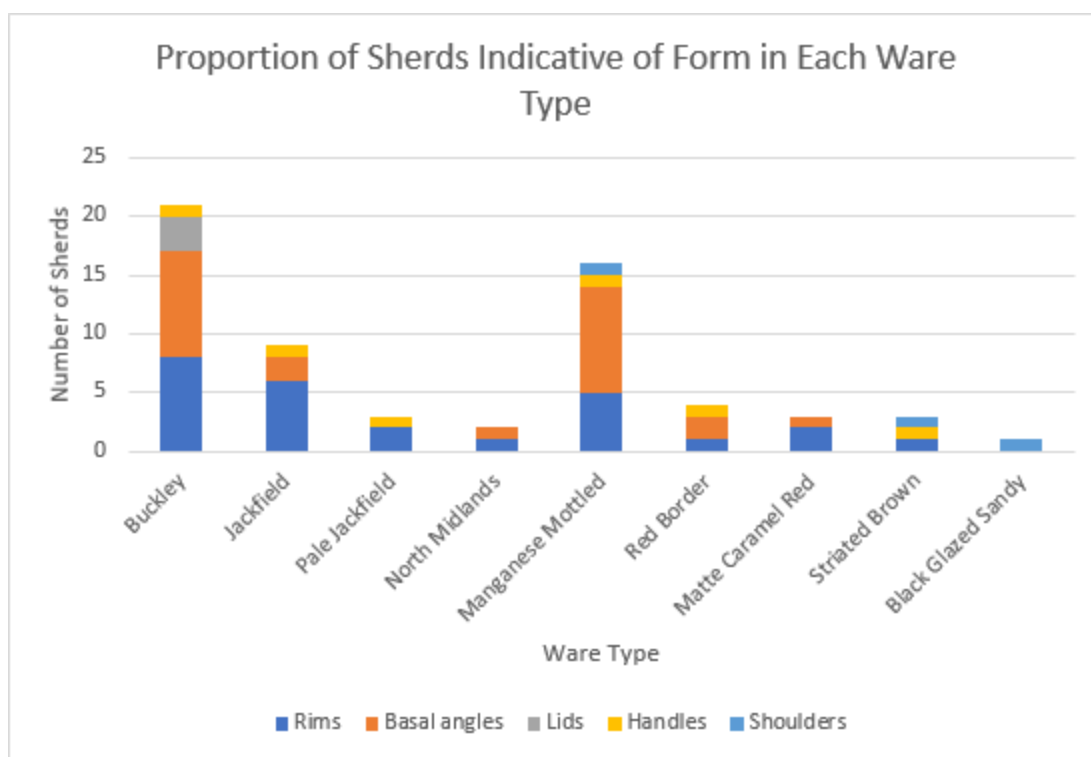


Figure 3. Chart showing the relative abundance of form-indicating sherds in each ware type.

Conclusions

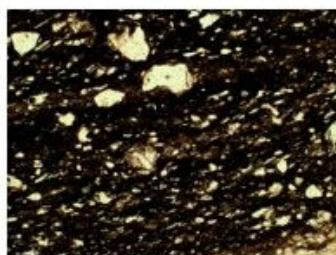
The original goals set out for this study included (1) to establish a typology of the post-medieval ceramics recovered from the site, (2) to determine the vessel forms represented in the ceramics and the social condition of the site's inhabitants, and (3) to establish a tentative chronology for the site.

A typology was established for the post-medieval Malkin Tower ceramics. Whenever diagnostic sherds such as rims and bases were present in a ware type, forms were tentatively identified. Based on the ware types and forms identified, the ceramics present at the site are reasonable for a late post-medieval rural household. These ware types would have most likely been available to lower-class households and the forms identified suggest that the primary activity at the site was the storage and consumption of food and drink; however, forms associated with food preparation, including pipkins, skillets, and other forms, are not present in the assemblage or could not be identified. None of the wares identified was in production earlier than 1640, with the exception of Border wares; however, Red Border ware was not in production in the forms identified at the Malkin Tower site until the mid-to-late 17th century (Pearce 1992, 11). With this in mind, it is reasonable to suggest that this occupation level of the site dates to the early-to-mid 18th century. Perhaps the most important result of this analysis has been to produce a typology of the Malkin Tower post-medieval ceramics which can serve as a comparative source for future research in the region.

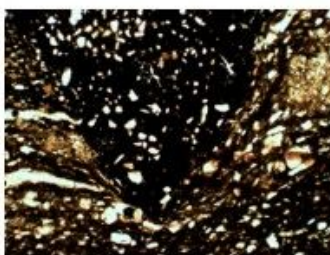
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Appendix A
Thin Section Photos
Buckley-type Ware



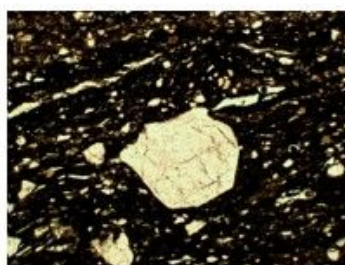
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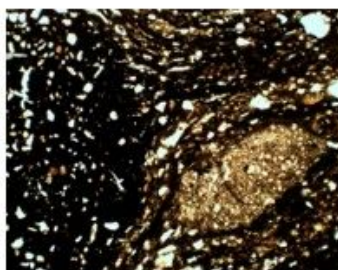
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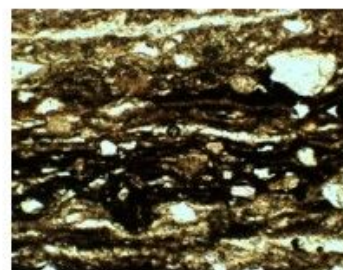
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156.24 PPL 40X



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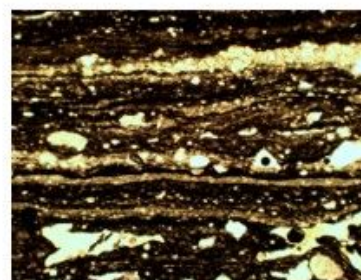
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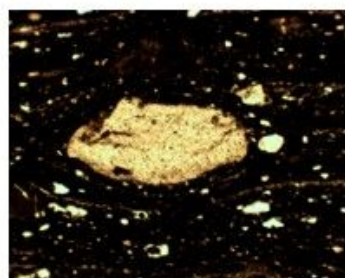
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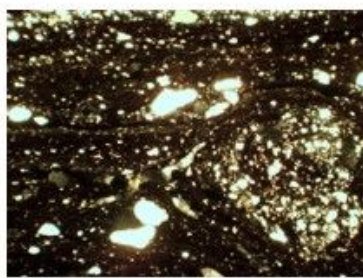
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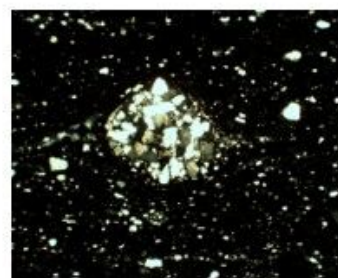
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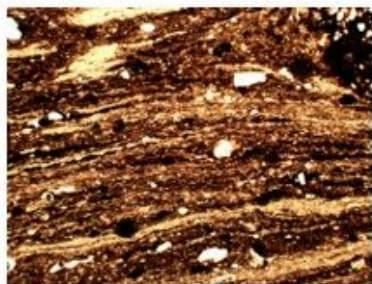
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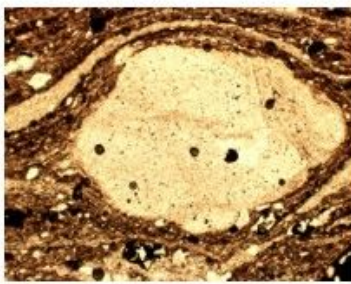
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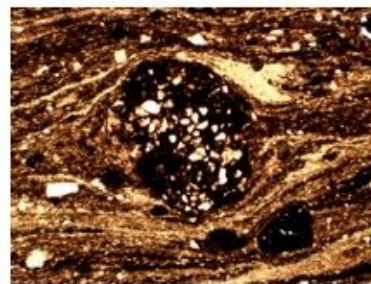
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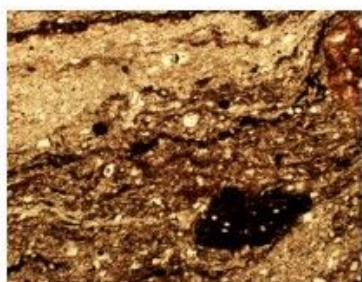
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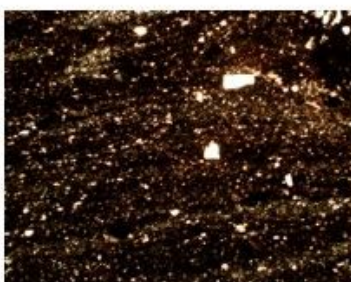
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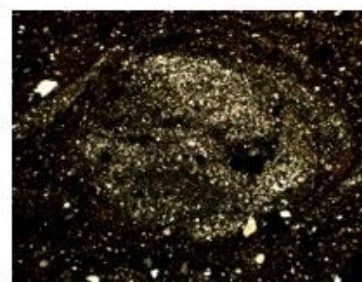
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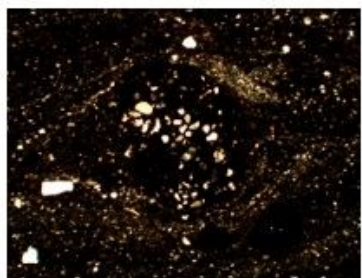
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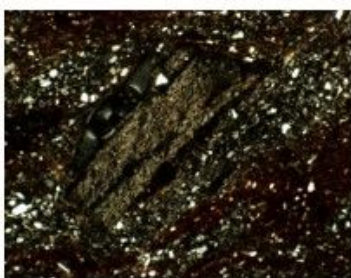
156.6 XPL 40X



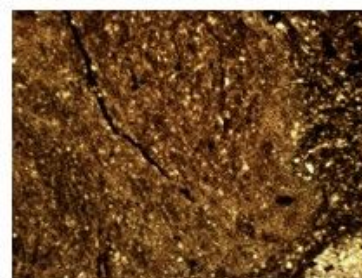
156.6 XPL 40X



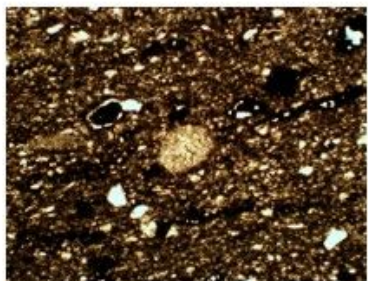
156.6 XPL 40X



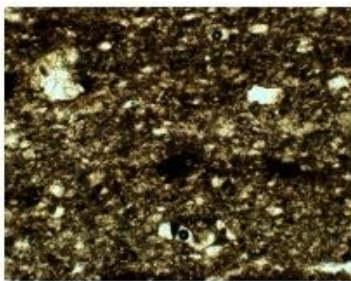
156.6 XPL 100X



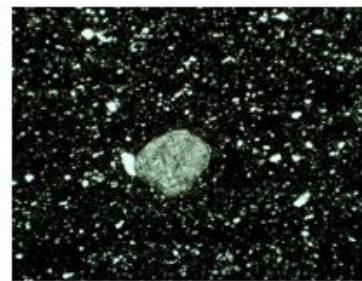
156.9 PPL 40X



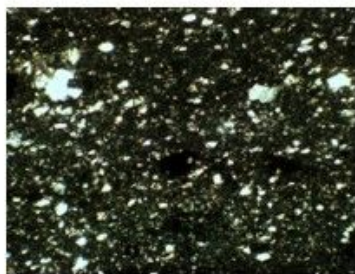
156.9 PPL 40X



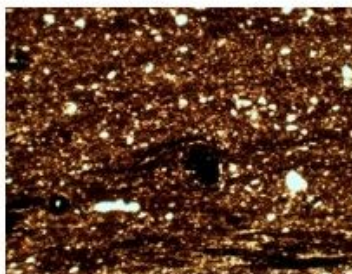
156.9 PPL 100X



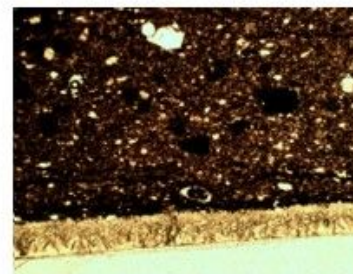
156.9 XPL 40X



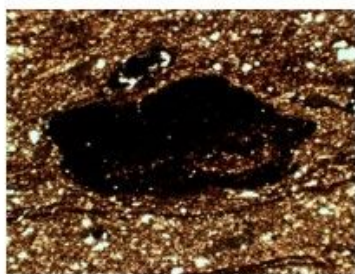
156.9 XPL 100X



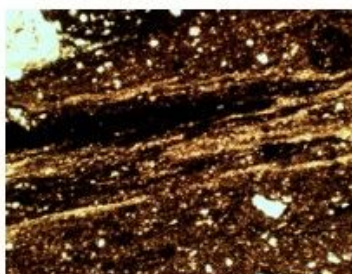
179.17 PPL 40X



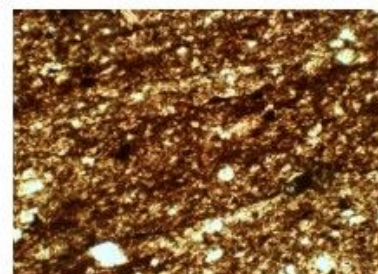
179.17 PPL 40X



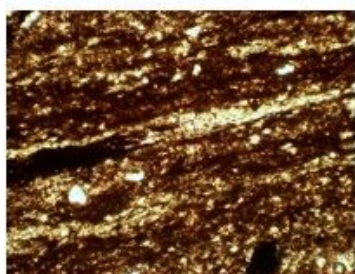
179.17 PPL 40X



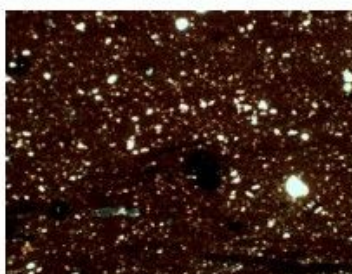
179.17 PPL 40X



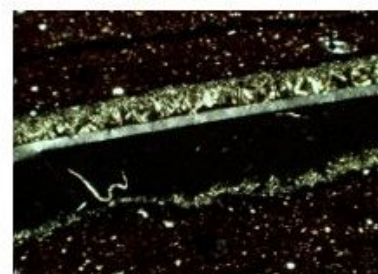
179.17 PPL 100X



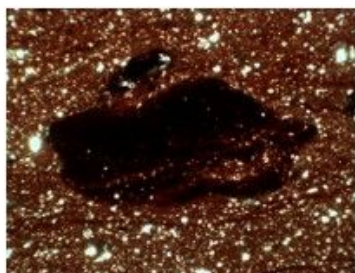
179.17 PPL 100X



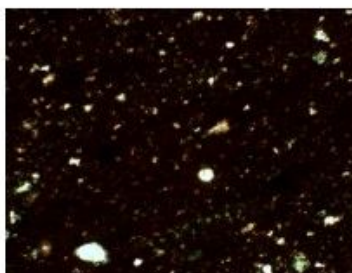
179.17 XPL 40X



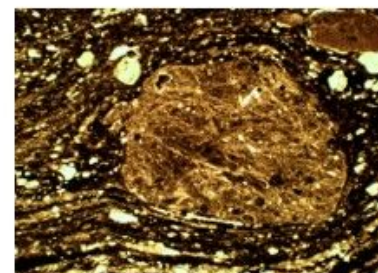
179.17 XPL 40X



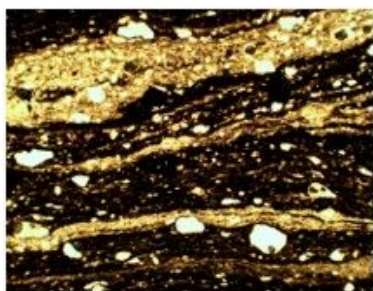
179.17 XPL 40X



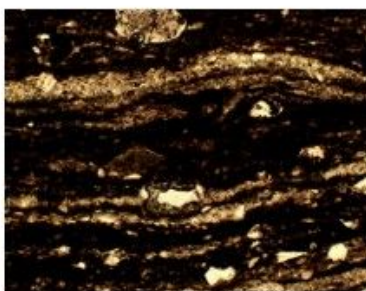
179.17 XPL 100X



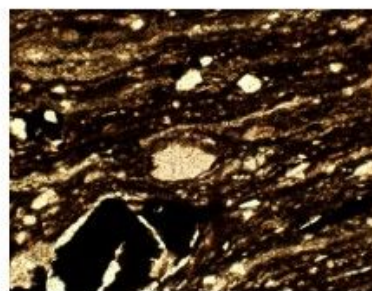
156.2 PPL 40X



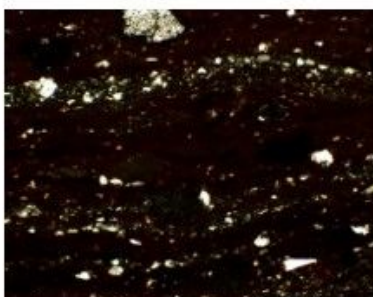
156.2 PPL 40X



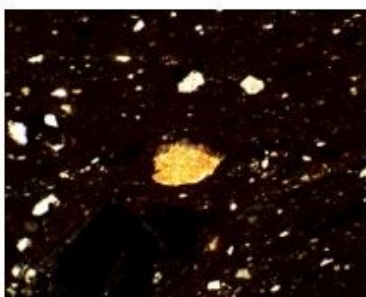
156.2 PPL 100X



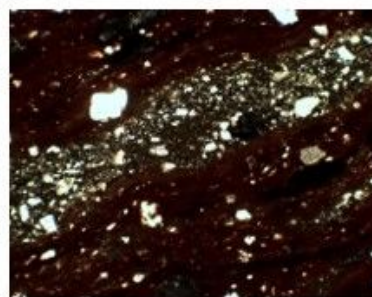
156.2 PPL 100X



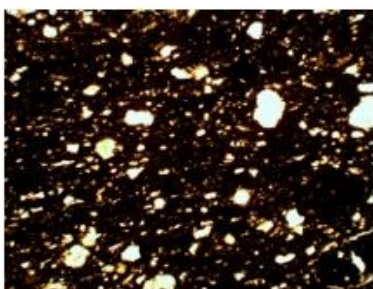
156.2 XPL 100X



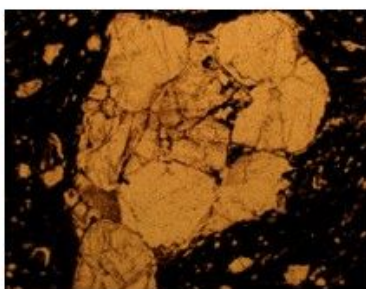
156.2 XPL 100X



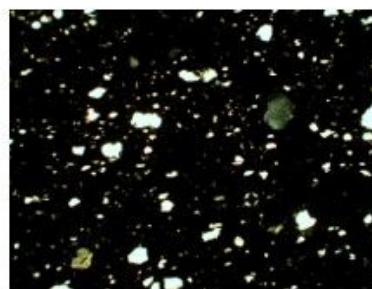
156.26 XPL 100X



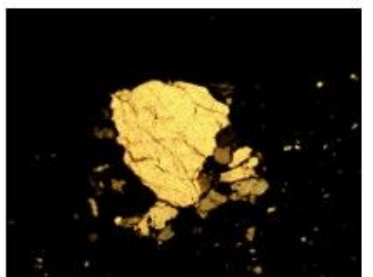
128.26 PPL 40X



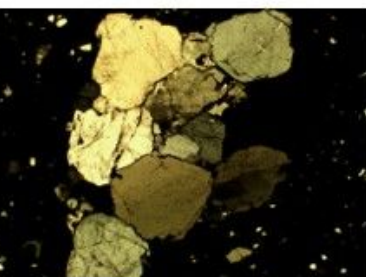
128.26 PPL 40X



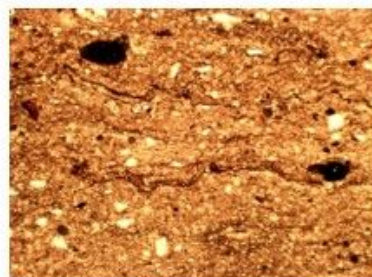
128.26 XPL 40X



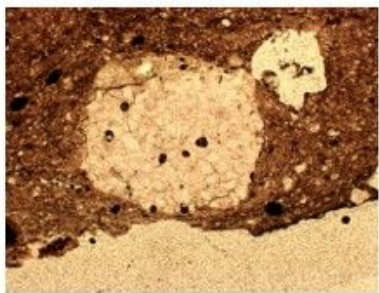
128.26 XPL 40X



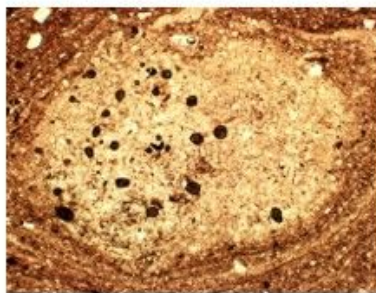
128.26 XPL 40X



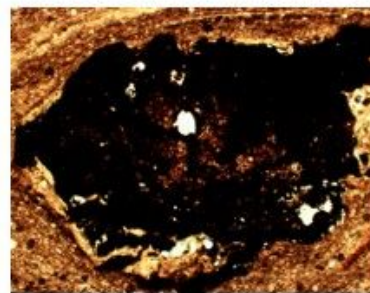
156.5 PPL 40X



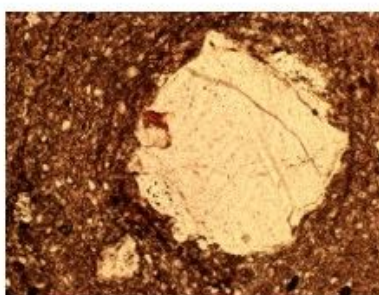
156.5 PPL 40X



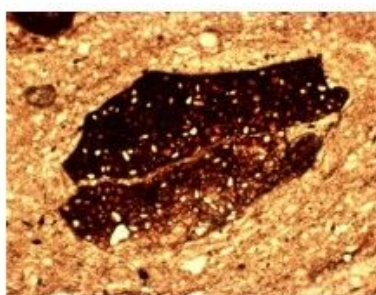
156.5 PPL 40X



156.5 PPL 40X



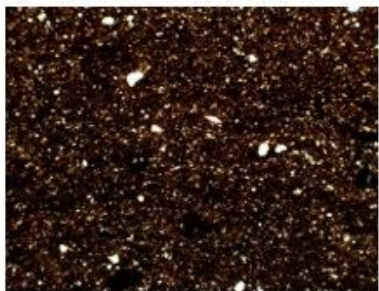
156.5 PPL 100X



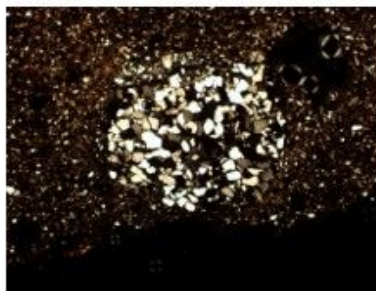
156.5 PPL 100X



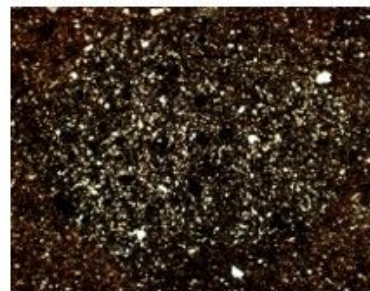
156.5 PPL 400X



156.5 XPL 40X



156.5 XPL 40X



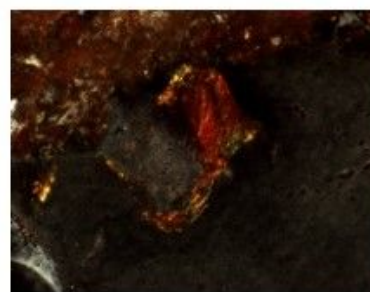
156.5 XPL 40X



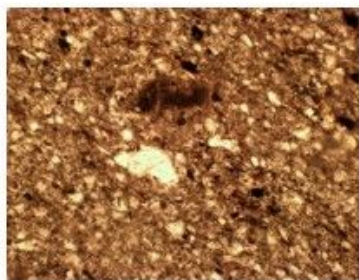
156.5 XPL 40X



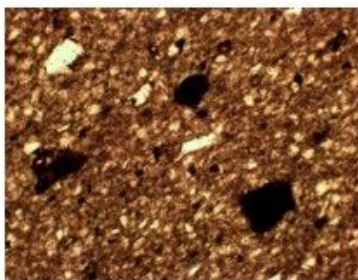
156.5 XPL 100X



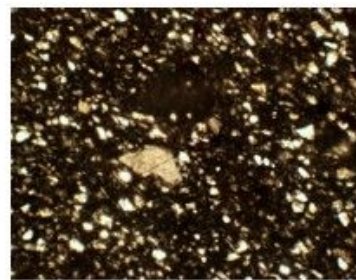
156.5 XPL 400X



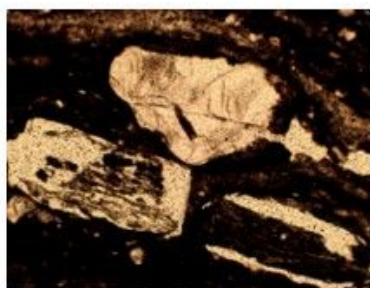
128.1 PPL 100X



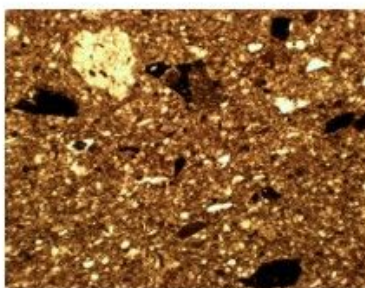
128.1 PPL 100X



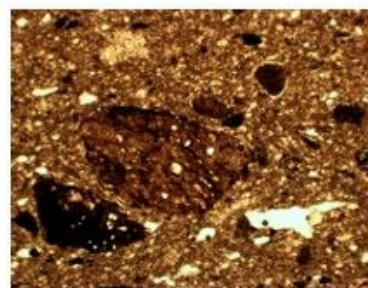
128.1 XPL 100X



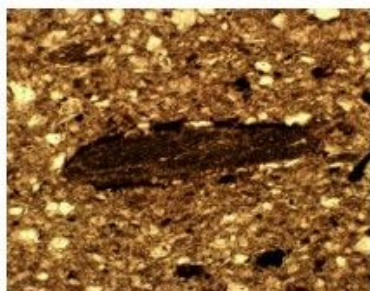
128.1 XPL 100X



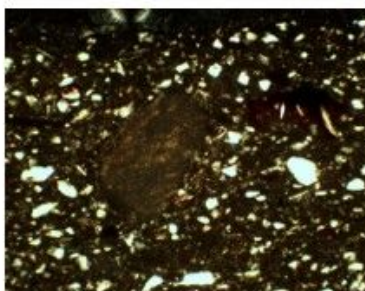
161.139 PPL 40X



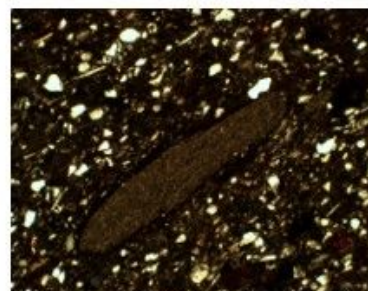
161.139 PPL 100X



161.139 PPL 100X

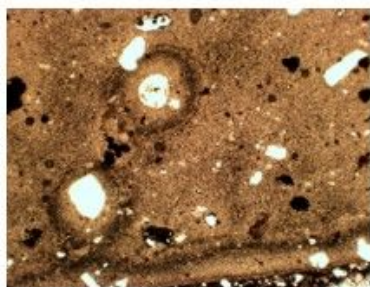


161.139 XPL 100X

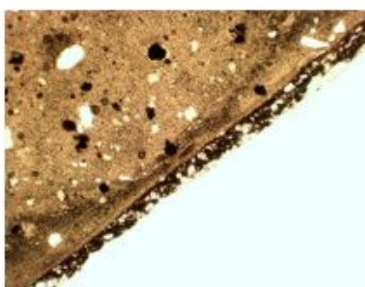


161.139 XPL 100X

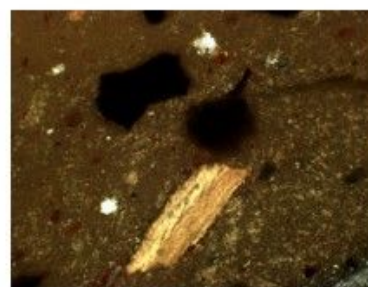
Pale Jackfield-type Ware



156.18 PPL 40X

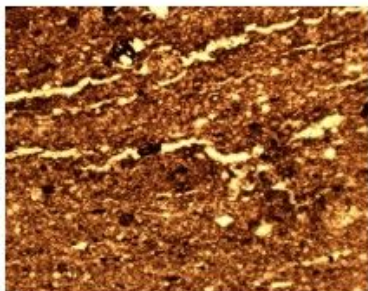


156.18 PPL 40X

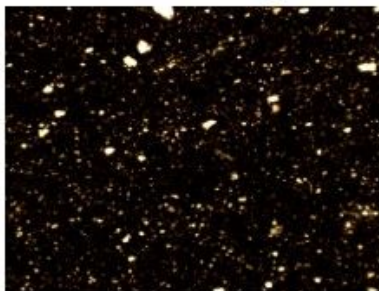


156.18 XPL 100X

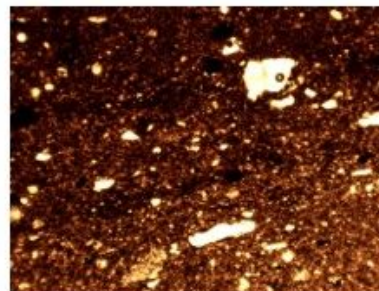
North Midlands Slipware



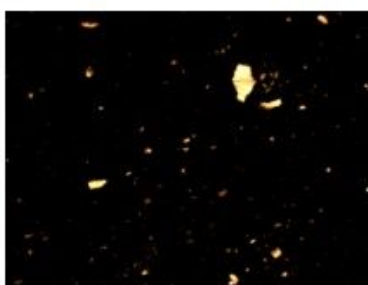
161.42 PPL 40X



161.42 XPL 40X

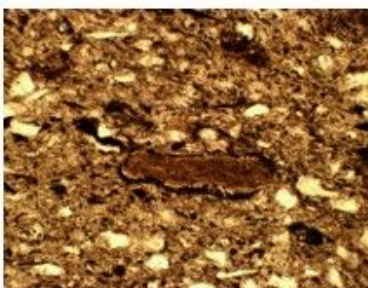


179.3 PPL 40X

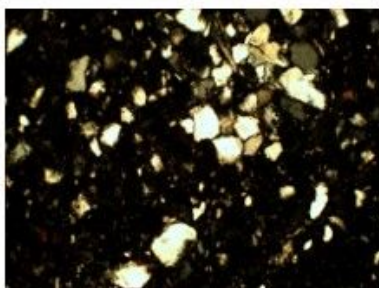


179.3 XPL 40X

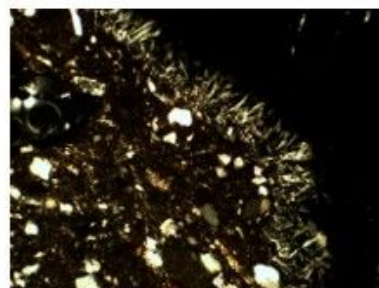
Manganese Mottled Ware



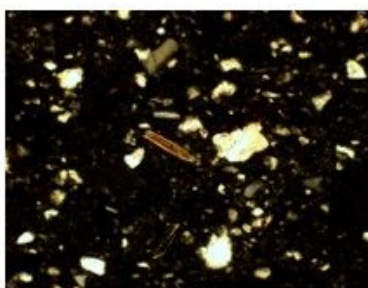
156.28 PPL 100X



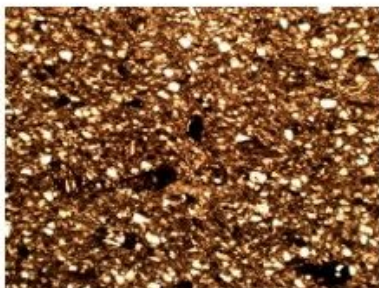
156.28 XPL 100X



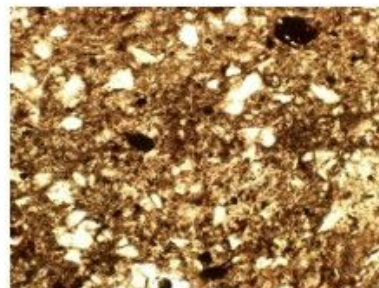
156.28 XPL 100X



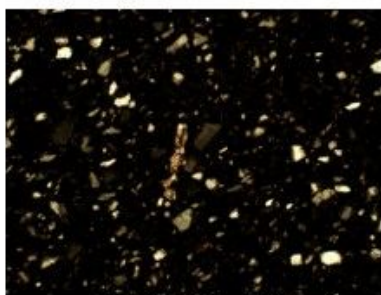
156.28 XPL 100X



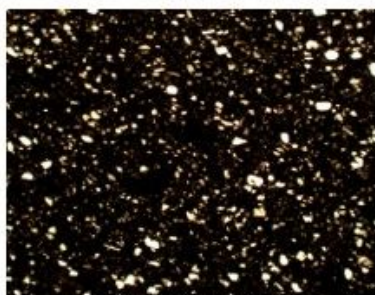
179.42 PPL 40X



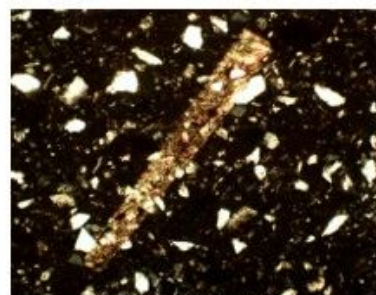
179.42 PPL 100X



179.42 XPL 100X

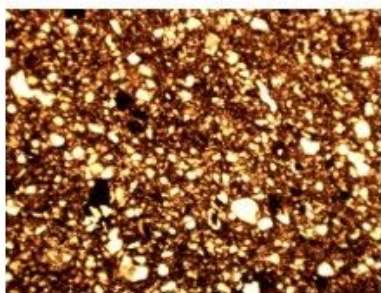


179.42 XPL 40X

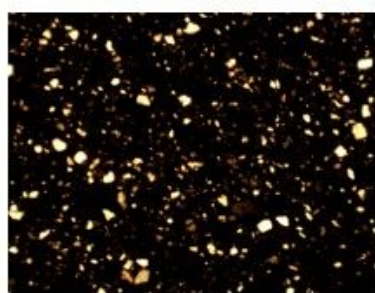


179.42 PPL 100X

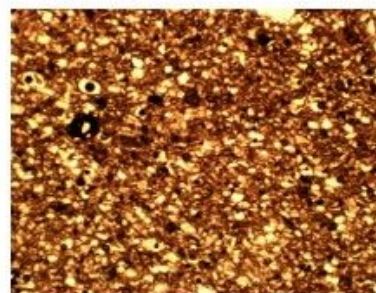
Red Border Ware



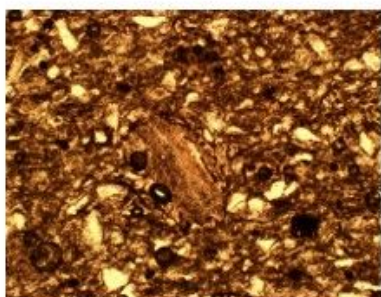
156.10 PPL 40X



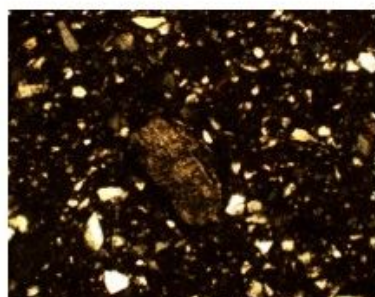
156.10 XPL 40X



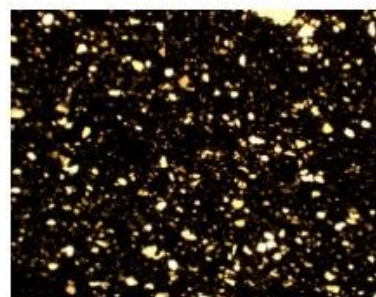
161.59 PPL 40X



161.59 PPL 100X

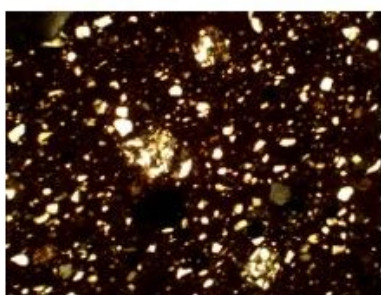


161.59 XPL 100X

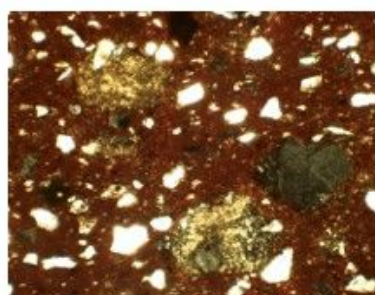


161.59 XPL 40X

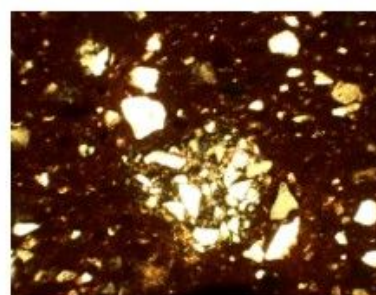
Matte Caramel-Glazed Redwares



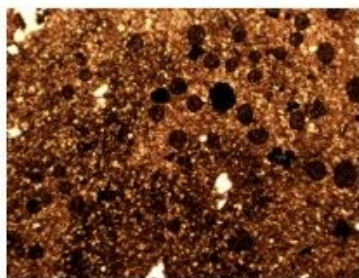
147.59 XPL 40X



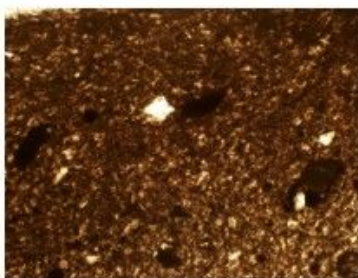
147.59 XPL 100X



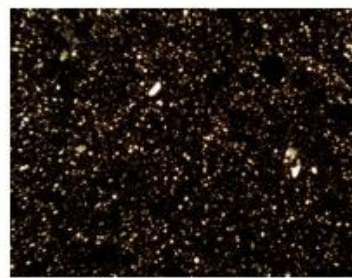
147.59 XPL 100X

Striated Brown-Glazed Sandy Ware

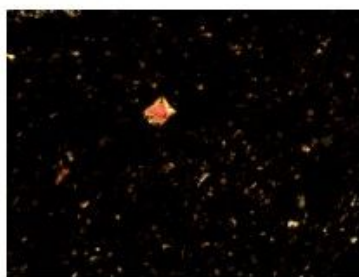
147.42 PPL 40X



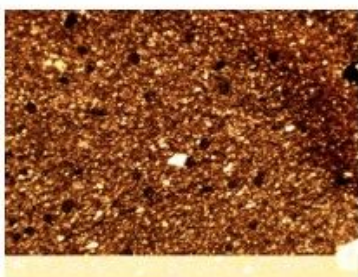
147.42 PPL 100X



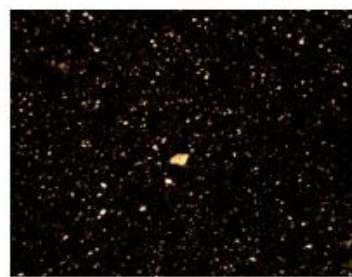
147.42 XPL 40X



147.42 XPL 100X



156.35 PPL 40X



156.35 XPL 40X

Appendix B
Paste Photos
Buckley-type Ware



128.2 30X



128.2 30X



128.2 30X



128.2 200X



128.2 200X



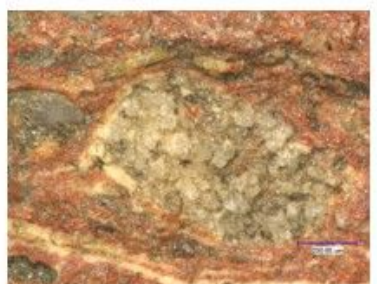
128.2 200X



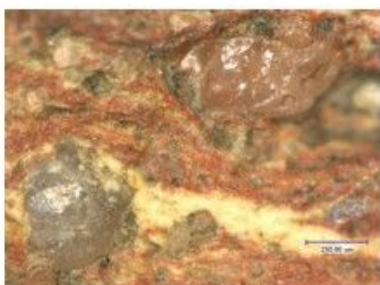
161.1 30X



161.1 200X



161.1 200X



161.1 200X



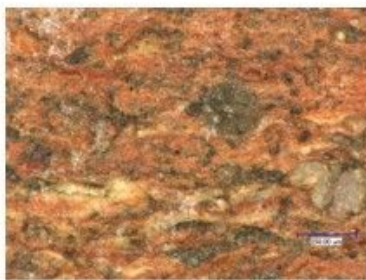
148.3 30X



148.3 30X



148.3 30X



148.3 200X



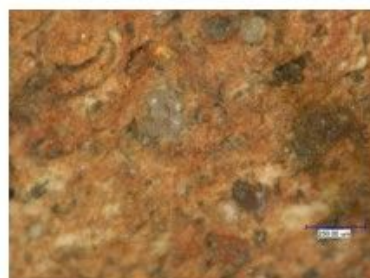
161.2 30X



161.2 200X



147.22 30X



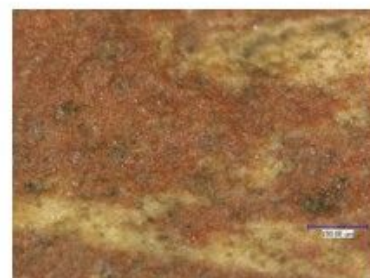
147.22 200X



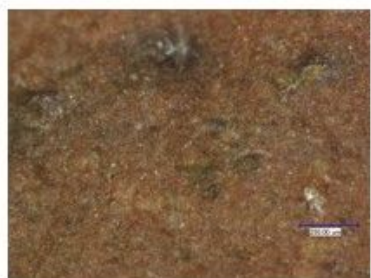
147.12 30X



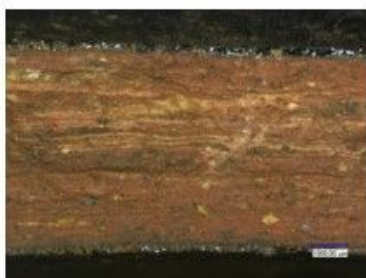
147.12 30X



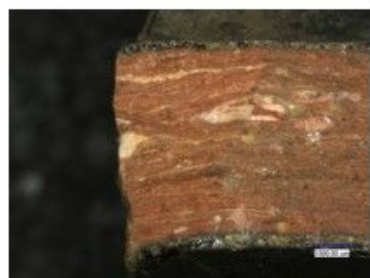
147.12 200X



147.12 200X



161.128 30X



161.128 30X



161.128 200X



161.18 30X



161.18 200X



161.18 200X



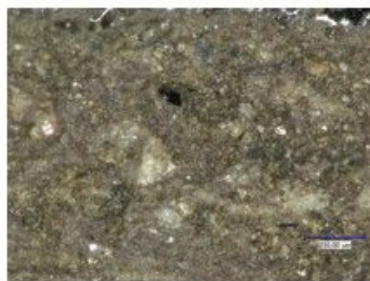
156.14 30X



156.14 200X



179.23 30X



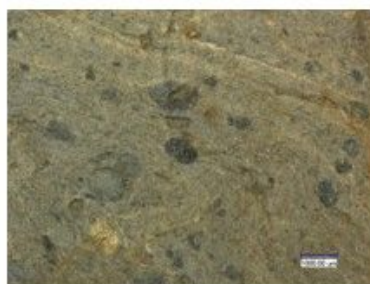
179.23 200X



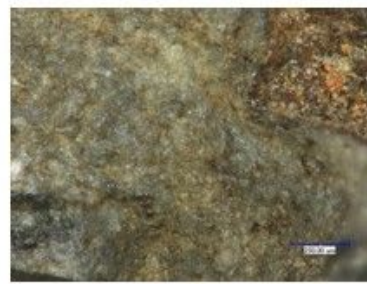
128.1 30X



128.1 200X



128.1 30X



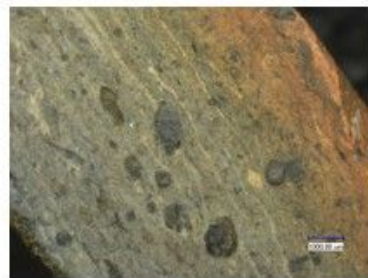
128.1 200X



128.1 200X



128.1 200X



161.131 30X



161.131 200X



179.28 30X



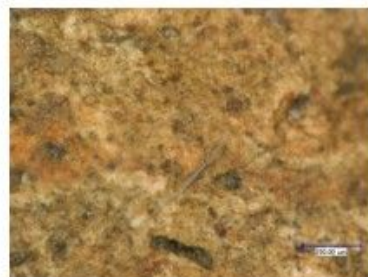
179.28 200X



147.32 30X



147.32 30X



147.32 200X



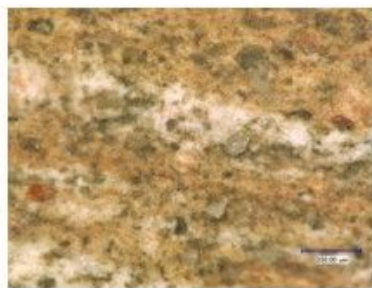
147.32 200X



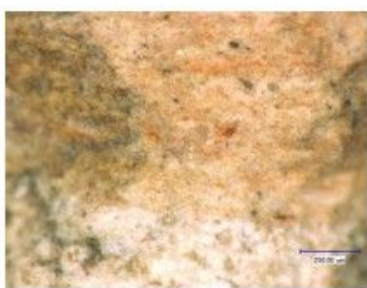
147.32 30X



156.29 30X



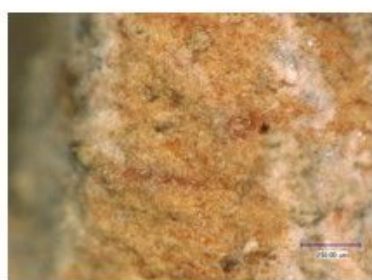
156.29 200X



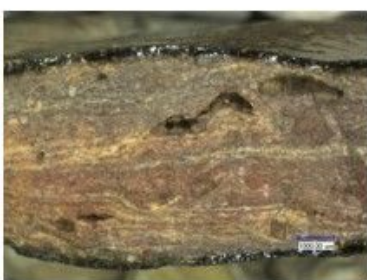
156.29 200X



147.50 30X



147.50 200X



156.24 30X



156.24 200X



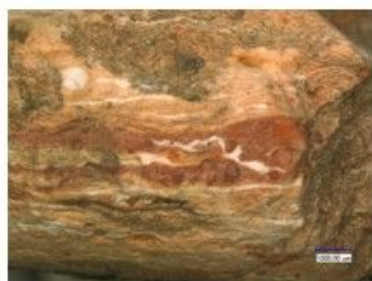
156.24 200X



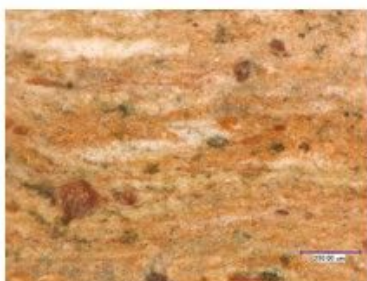
156.6 30X



156.6 30X



156.6 30X



156.6 200X



156.6 200X



156.9 30X



179.17 30X



179.17 200X

Jackfield-type Ware



147.8 30X



147.8 200X



128.12 30X



128.12 200X



128.12 200X



128.13 30X



128.13 200X



156.16 30X

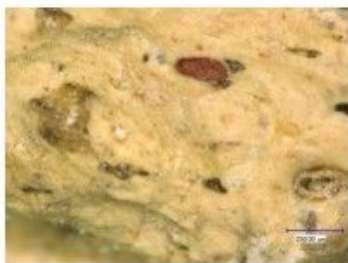


156.16 200X

Pale Jackfield-type Ware



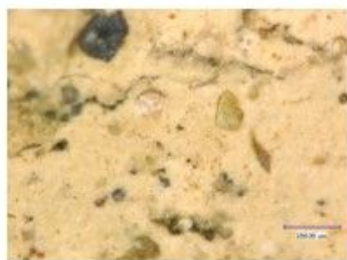
161.75 30X



161.75 200X



156.18 30X



156.18 200X

North Midlands Slipware



161.42 30X



161.42 30X



161.34 30X



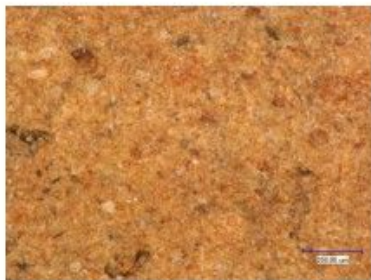
161.34 200X



161.145 30X



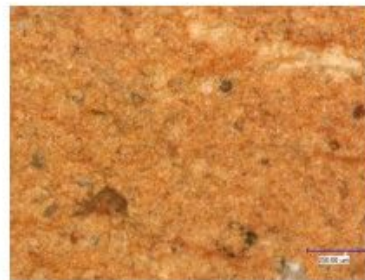
179.59 30X



179.59 200X



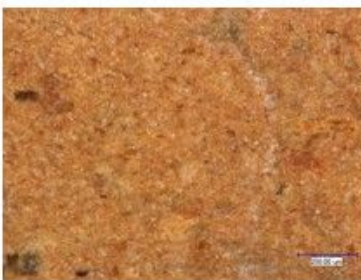
161.39 30X



161.39 200X



179.3 30X

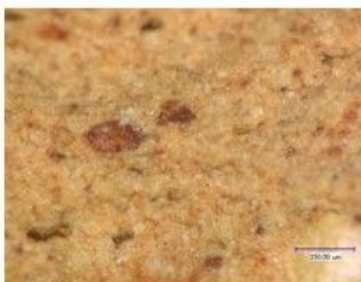


179.3 200X

Manganese Mottled Ware



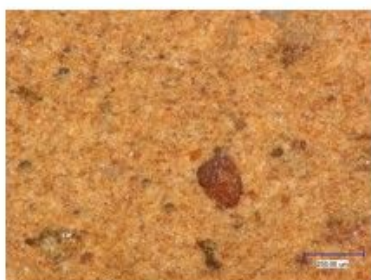
128.8 30X



128.8 200X



148.2 30X



148.2 200X



161.58 30X



161.58 200X



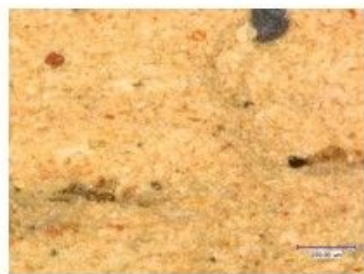
161.135 30X



161.135 200X



156.7 30X



156.7 200X



156.4 30X



156.4 200X



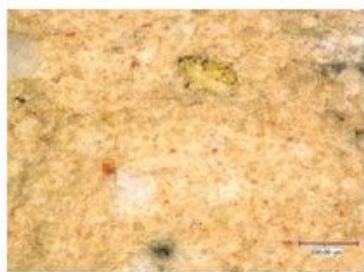
156.1 30X



156.1 200X



161.62 30X



161.62 200X



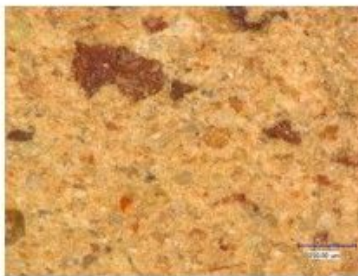
147.38 30X



147.38 200X



179.5 30X



179.5 200X



161.136 30X

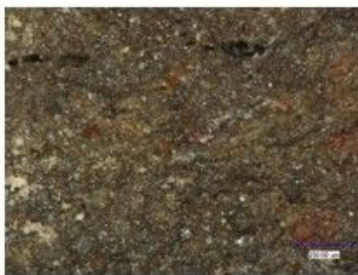


161.136 200X

Red Border Ware



156.10 30X

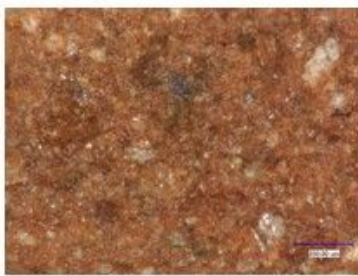


156.10 200X

Matte Caramel-Glazed Redwares



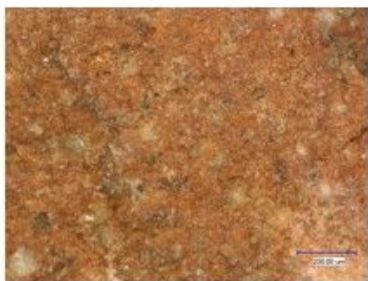
179.2 30X



179.2 200X

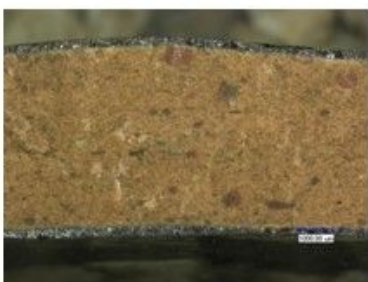


147.37 30X

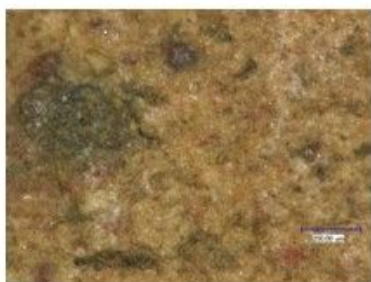


147.37 200X

Black-Glazed Sandy Ware



148.8 30X

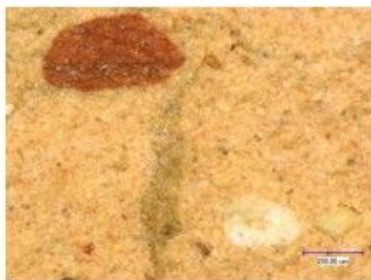


148.8 200X

Striated Brown-Glazed Sandy Ware



147.42 30X



147.42 200X

Appendix C

Prolife and Plan Photos

Thin Section Samples



147.38 Ext.
Manganese Mottled ware



147.38 Int.



147.42 Ext.
Striated Brown Sandy ware



147.42 Int.



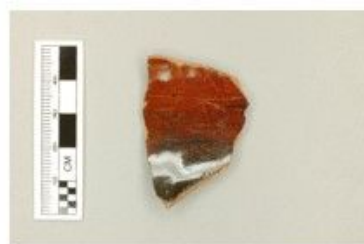
156.20 Ext.
Buckley-type ware



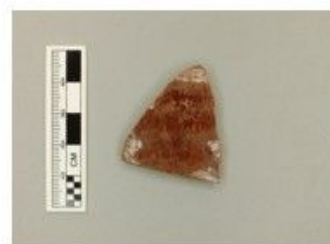
156.20 Int.



161.42 Ext.
North Midlands Slipware



161.42 Int.



161.59 Ext.
Red Border ware



161.59 Int.



128.10 Ext.
North Midlands Slipware



128.10 Int.



128.26 Ext.
Buckley-type ware



128.26 Int.



147.59 Ext.
Matte Caramel-Glazed
Redware



147.59 Int.



156.1, 156.28 Ext.
Manganese Mottled ware



156.1, 156.28 Int.



156.5 Ext.
Buckley-type ware



156.5 Int.



156.6 Ext.
Buckley-type ware



156.6 Ext.



156.9 Ext.
Buckley-type ware



156.9 Int.



156.10 Ext.
Red Border ware



156.10 Int.



156.10 Profile



156.18 Ext.
Pale Jackfield-type ware



156.18 Int.



156.18 Profile



156.24 Ext.
Buckley-type ware



156.24 Int.



156.26 Ext.
Buckley-type ware



156.26 Int.



156.35 Ext.
Striated Brown Sandy ware



156.35 Int.



161.30 Ext.
Buckley-type ware



161.30 Int.



161.139 Ext.
Buckley-type ware



161.139 Int.



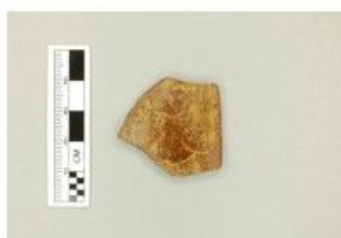
179.3 Ext.
North Midlands Slipware



179.3 Int.



179.17 Ext.
Matte Caramel-Glazed
Redware



179.17 Int.



179.42 Ext.
Manganese Mottle ware



179.42 Int.

Plan and Profile Views – Rims & Bases (Not thin-sectioned)



Buckley-type ware base
Ext.



Buckley-type ware base
Int.



Buckley-type
base Profile



Buckley-type base ext.



Buckley-type base int.



Buckley-type base
profile



Buckley-type everted
grooved rim ext.



Buckley-type everted
grooved rim int.



Buckley-type everted
grooved rim profile, 27
cm diameter



Buckley-type fine everted
rim ext.



Buckley-type fine
everted rim int.



Buckley-type fine
everted rim profile,
19 cm diameter



Buckley-type lid sherds ext.



Buckley-type lid sherds int.

Buckley-type lid sherd
profile, 18 cm diameterBuckley-type reinforced
rims ext.Buckley-type
reinforced rim
profile, 38 cm
diameterBuckley-type
reinforced rim
profile, 38 cm
diameterBuckley-type square
everted rim ext.Buckley-type square everted
rim int.Buckley-type
square everted rim
profile, 31 cm
diameterBuckley-type unreinforced
everted grooved rim ext.Buckley-type unreinforced
everted grooved rim int.Buckley-type
unreinforced everted
grooved rim profile,
27 cm diameter



Jackfield-type base ext.



Jackfield-type base int.

Jackfield-type base
profile

Jackfield-type base ext.



Pale Jackfield-type base int.

Jackfield-type everted rims
ext.Jackfield-type everted rims
int.Jackfield-type everted
rim profileJackfield-type everted rim
profileJackfield-type everted
rim profileJackfield-type everted
rim profile



Jackfield-type everted
rim profile



Jackfield-type everted
rim profile



Jackfield-type flat base sherds
ext.



Jackfield-type flat base
sherds int.



Jackfield-type flat base
sherd profile



Jackfield-type flat base
(?) sherd profile



Jackfield-type handle



Jackfield-type handle



Jackfield-type
handle profile



Pale Jackfield rim ext.



Pale Jackfield rim int.



Pale Jackfield-type
rim profile, 23 cm
diameter



North Midlands
Slipware base ext.



North Midlands Slipware
base int.



North Midlands
Slipware base profile



North Midlands Slipware
body sherds ext.



North Midlands Slipware
body sherds int.



North Midlands flat base
profile, 25 cm diameter



Manganese Mottle ware flat
base sherds ext.



Manganese Mottled ware flat
base sherds int.



Manganese Mottled ware
flat base sherd profile



Manganese Mottled base ext.



Manganese Mottled ware
base int.



Manganese Mottled ware base
profile



Manganese Mottled ware
vertical mug bases ext.



Manganese Mottled ware
vertical mug bases int.



Manganese Mottled ware
vertical mug base profile



Manganese Mottled ware mug
rims ext.



Manganese Mottled ware mug
rims int.



Manganese Mottled ware
mug rim profile, 29 cm
diameter



Manganese Mottled ware
pitcher bases ext.



Manganese Mottled ware
pitcher bases int.



Manganese Mottled ware
pitcher base profile



Manganese Mottled ware
shallow dish bases ext.



Manganese Mottled ware
shallow dish bases int.



Manganese Mottled ware
shallow dish base profile



Manganese Mottled ware
vertical mug base ext.



Manganese Mottled ware
vertical mug base int.



Manganese Mottled ware
vertical mug base profile



Red Border ware flanged dish
rim ext.



Red Border ware flanged dish
rim int.



Red Border ware flanged
dish rim profile, 27 cm
diameter



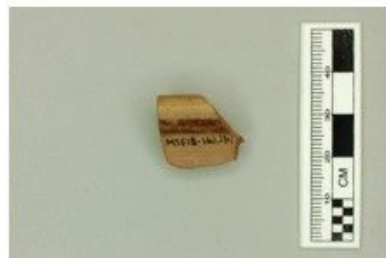
Matte Caramel-Glazed
Redware base ext.



Matte Caramel-Glazed
Redware base int.



Matte Caramel-Glazed
Redware base profile



Matte Caramel-Glazed
Redware everted rim ext.



Matte Caramel-Glazed
Redware everted rim int.



Matte Caramel-Glazed
Redware everted rim
profile



Black-Glazed Sandy ware ext.



Black-Glazed Sandy ware int.

Appendix D

Catalog

Catalog #	Ware Type	Catalog #	Ware Type	Catalog #	Ware Type	Catalog #	Ware Type	Catalog #	Ware Type
161.8	Buckley-type	161.28	Buckley-type	179.31	Buckley-type	.155	Buckley-type	148.7	Buckley-type
148.17	Buckley-type	161.49	Buckley-type	161.25	Buckley-type	.54	Buckley-type	148.26	Buckley-type
156.46	Buckley-type	147.36	Buckley-type	179.12	Buckley-type	148.31	Buckley-type	156.42	Buckley-type
128.2	Buckley-type	128.17	Buckley-type	179.56	Buckley-type	.160	Buckley-type	179.66	Buckley-type
161.1	Buckley-type	147.18	Buckley-type	179.38	Buckley-type	.56	Buckley-type	.153	Buckley-type
148.3	Buckley-type	161.20	Buckley-type	179.21	Buckley-type	179.77	Buckley-type	128.20	Buckley-type
156.3	Buckley-type	161.22	Buckley-type	179.16	Buckley-type	148.38	Buckley-type	.154	Buckley-type
161.2	Buckley-type	161.16	Buckley-type	148.9	Buckley-type	.53	Buckley-type	147.21	Buckley-type
147.17	Buckley-type	147.14	Buckley-type	179.70	Buckley-type	179.90	Buckley-type	128.16	Buckley-type
147.25	Buckley-type	179.57	Buckley-type	179.83	Buckley-type	161.69	Buckley-type	147.61	Buckley-type
161.7	Buckley-type	147.19	Buckley-type	179.61	Buckley-type	156.50	Buckley-type	179.84	Buckley-type
161.15	Buckley-type	161.141	Buckley-type	179.67	Buckley-type	.22	Buckley-type	148.15	Buckley-type
128.27	Buckley-type	128.29	Buckley-type	148.22	Buckley-type	.43	Buckley-type	156.32	Buckley-type
147.22	Buckley-type	147.24	Buckley-type	156.33	Buckley-type	148.29	Buckley-type	179.41	Buckley-type
161.45	Buckley-type	179.10	Buckley-type	147.11	Buckley-type	1	Buckley-type	156.58	Buckley-type
179.13	Buckley-type	156.12	Buckley-type	179.37	Buckley-type	.45	Buckley-type	148.10	Buckley-type
148.21	Buckley-type	156.44	Buckley-type	161.35	Buckley-type	.40	Buckley-type	161.72	Buckley-type
161.138	Buckley-type	148.14	Buckley-type	148.25	Buckley-type	179.6	Buckley-type	161.53	Buckley-type
147.12	Buckley-type	161.3	Buckley-type	148.20	Buckley-type	161.149	Buckley-type	179.44	Buckley-type
179.52	Buckley-type	128.7	Buckley-type	179.15	Buckley-type	179.23	Buckley-type	179.71	Buckley-type
161.24	Buckley-type	179.14	Buckley-type	179.35	Buckley-type	128.1	Buckley-type	179.91	Buckley-type
147.15	Buckley-type	156.39	Buckley-type	179.72	Buckley-type	161.36	Buckley-type	148.34	Buckley-type
156.21	Buckley-type	156.13	Buckley-type	179.30	Buckley-type	161.131	Buckley-type	156.56	Buckley-type
161.9	Buckley-type	156.14	Buckley-type	148.28	Buckley-type	161.6	Buckley-type	161.95	Buckley-type
161.128	Buckley-type	128.6	Buckley-type	179.80	Buckley-type	156.27	Buckley-type	148.24	Buckley-type
161.23	Buckley-type	161.32	Buckley-type	179.88	Buckley-type	161.43	Buckley-type	179.79	Buckley-type
161.129	Buckley-type	128.28	Buckley-type	179.82	Buckley-type	156.48	Buckley-type	.96	Buckley-type
147.17	Buckley-type	179.29	Buckley-type	161.144	Buckley-type	156.44	Buckley-type	161.87	Buckley-type
161.18	Buckley-type	161.11	Buckley-type	156.34	Buckley-type	161.130	Buckley-type	.168	Buckley-type
161.12	Buckley-type	161.10	Buckley-type	156.38	Buckley-type	128.9	Buckley-type	.86	Buckley-type
147.23	Buckley-type	156.30	Buckley-type	161.31	Buckley-type	148.1	Buckley-type	179.85	Buckley-type
179.4	Buckley-type	179.58	Buckley-type	.87	Buckley-type	161.27	Buckley-type	.163	Buckley-type
156.19	Buckley-type	179.64	Buckley-type	161.148	Buckley-type	148.6	Buckley-type	.24	Buckley-type
161.133	Buckley-type	161.52	Buckley-type	156.60	Buckley-type	161.14	Buckley-type	.57	Buckley-type
147.36	Buckley-type	156.47	Buckley-type	179.48	Buckley-type	161.29	Buckley-type	147.35	Buckley-type
148.5	Buckley-type	161.26	Buckley-type	156.49	Buckley-type	156.15	Buckley-type	.86	Buckley-type

KEY:

Yellow – Paste photos taken

Blue – thin section prepared

Green – Both

179.46	Buckley-type	179.73	Buckley-type	179.24	Buckley-type	161.21	Buckley-type	156.65	Buckley-type
.30	Buckley-type	156.5	Buckley-type	156.66	Jackfield-type	128.11	N. Midlands Slip	156.37	Mang. Mottled
147.29	Buckley-type	161.139	Buckley-type	128.21	Jackfield-type	148.33	N. Midlands Slip	156.1	Mang. Mottled
179.68	Buckley-type	.45	Jackfield-type	.25	Jackfield-type	.49	N. Midlands Slip	156.11	Mang. Mottled
161.74	Buckley-type	147.8	Jackfield-type	179.75	Jackfield-type	148.36	N. Midlands Slip	156.2	Mang. Mottled
147.32	Buckley-type	128.12	Jackfield-type	.162	Jackfield-type	161.65	N. Midlands Slip	161.62	Mang. Mottled
147.31	Buckley-type	147.12	Jackfield-type	.84	Jackfield-type	161.46	N. Midlands Slip	161.64	Mang. Mottled
161.132	Buckley-type	128.13	Jackfield-type	179.47	Jackfield-type	161.42	N. Midlands Slip	161.61	Mang. Mottled
161.143	Buckley-type	156.36	Jackfield-type	161.77	Jackfield-type	161.34	N. Midlands Slip	161.146	Mang. Mottled
161.38	Buckley-type	148.13	Jackfield-type	147.9	Jackfield-type	179.19	N. Midlands Slip	179.74	Mang. Mottled
156.29	Buckley-type	147.16	Jackfield-type	.42	Jackfield-type	161.142	N. Midlands Slip	147.38	Mang. Mottled
161.19	Buckley-type	156.8	Jackfield-type	161.77	Jackfield-type	161.151	N. Midlands Slip	179.5	Mang. Mottled
179.14	Buckley-type	156.31	Jackfield-type	147.9	Jackfield-type	161.145	N. Midlands Slip	161.136	Mang. Mottled
128.5	Buckley-type	156.16	Jackfield-type	156.17	Pale Jackfield-type	148.23	N. Midlands Slip	.23	Mang. Mottled
147.28	Buckley-type	128.19	Jackfield-type	161.76	Pale Jackfield-type	161.137	N. Midlands Slip	179.11	Mang. Mottled
147.33	Buckley-type	161.13	Jackfield-type	.79	Pale Jackfield-type	156.22	N. Midlands Slip	179.55	Mang. Mottled
161.94	Buckley-type	179.29	Jackfield-type	161.75	Pale Jackfield-type	179.34	N. Midlands Slip	156.57	Mang. Mottled
156.34	Buckley-type	161.5	Jackfield-type	156.43	Pale Jackfield-type	161.54	N. Midlands Slip	179.8	Mang. Mottled
156.64	Buckley-type	161.50	Jackfield-type	161.82	Pale Jackfield-type	179.69	N. Midlands Slip	179.45	Mang. Mottled
179.36	Buckley-type	148.4	Jackfield-type	161.85	Pale Jackfield-type	161.156	N. Midlands Slip	179.65	Mang. Mottled
161.93	Buckley-type	161.55	Jackfield-type	.91	Pale Jackfield-type	179.59	N. Midlands Slip	.157	Mang. Mottled
148.30	Buckley-type	161.17	Jackfield-type	161.41	Pale Jackfield-type	179.63	N. Midlands Slip	.167	Mang. Mottled
147.30	Buckley-type	161.56	Jackfield-type	179.40	Pale Jackfield-type	161.164	N. Midlands Slip	147.39	Mang. Mottled
179.78	Buckley-type	147.48	Jackfield-type	156.41	Pale Jackfield-type	161.39	N. Midlands Slip	.52	Mang. Mottled
161.4	Buckley-type	161.33	Jackfield-type	161.83	Pale Jackfield-type	179.3	N. Midlands Slip	147.55	Mang. Mottled
148.27	Buckley-type	179.27	Jackfield-type	161.81	Pale Jackfield-type	128.10	N. Midlands Slip	.165	Mang. Mottled
156.61	Buckley-type	161.44	Jackfield-type	156.51	Pale Jackfield-type	128.8	Mang. Mottled	.47	Mang. Mottled
161.47	Buckley-type	179.26	Jackfield-type	.68	Pale Jackfield-type	148.2	Mang. Mottled	179.89	Mang. Mottled
147.50	Buckley-type	179.32	Jackfield-type	161.152	Pale Jackfield-type	161.58	Mang. Mottled	147.47	Mang. Mottled
.80	Buckley-type	147.18	Jackfield-type	156.62	Pale Jackfield-type	179.1	Mang. Mottled	147.43	Mang. Mottled
156.63	Buckley-type	.158	Jackfield-type	156.53	Pale Jackfield-type	161.135	Mang. Mottled	.67	Mang. Mottled
156.24	Buckley-type	.51	Jackfield-type	.89	Pale Jackfield-type	156.7	Mang. Mottled	179.81	Mang. Mottled
156.6	Buckley-type	.88	Jackfield-type	161.90	Pale Jackfield-type	147.41	Mang. Mottled	179.22	Mang. Mottled
156.9	Buckley-type	161.78	Jackfield-type	156.95	Pale Jackfield-type	147.40	Mang. Mottled	161.40	Mang. Mottled
179.17	Buckley-type	156.40	Jackfield-type	156.52	Pale Jackfield-type	179.43	Mang. Mottled	.46	Mang. Mottled
		179.75	Jackfield-type	156.25	Pale Jackfield-type	156.4	Mang. Mottled	.166	Mang. Mottled

