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Summary

Thin sectioning of twenty-five representative sherds of later Mediaeval pottery from dated contexts allowed them to be divided into a number of broad fabric groups based on the range of non-plastic inclusions present. These consisted of: (1) volcanic, possibly from the Exeter district, (2) gabbroic, from the Lizard, (3) chert-tempered, (4) slate-tempered, probably local, (5) North Devon gravel-tempered ware, (6) quartz, (7) ?St. Germains ware from the Tamar Valley, and (8) tourmaline-granite, possibly from the Fowey Valley.

Author's address :-

D F Williams PhD FSA

Department of Archaeology
University of Southampton
Highfield
Southampton
SO9 5NH

A PETROLOGICAL EXAMINATION OF MEDIAEVAL POTTERY FROM LAUNCESTON CASTLE, CORNWALL

D.F. Williams, Ph.D., FSA

(HBMC Ceramic Petrology Project)

Department of Archaeology, University of Southampton

Introduction

Twenty-five representative samples of later Mediaeval pottery recovered from excavations at Launceston Castle, Cornwall, were submitted for a detailed fabric examination by thin sectioning and study under the petrological microscope. The main objective of the analysis was to confirm the validity of a provisional fabric classification in the hand-specimen already carried out on the pottery. In addition, it was hoped that useful suggestions might be forthcoming with regard to the likely origins of at least some of the samples. All of the sherds submitted were initially studied macroscopically with the aid of a binocular microscope (x20). Munsell colour charts are referred to together

with free descriptive terms. Launceston Castle lies on the bank of the River Kensey, near to its confluence with the Rivers Attery and Tamar. It is situated on Carboniferous Culm Measures, closeby to scattered outcrops of chert and Pillow Lava and Schalstein, with larger deposits of Devonian Slates some two miles to the south (Geological Survey 1" Map of England Sheet no. 337).

Petrology and Fabric

The original fabric numbering of the sherds has been retained throughout.

Fabrics 1A; 1B/C; 1C

Wares made and used throughout Cornwall prior to the Norman Conquest but very soon discontinued thereafter.

LC Fabric 1A: Bar-lug fabric with much white mica

Sherd 1: from ZC (29)/(30), bag(498). Period 1: 2nd Phase (turf on the surface of the first bailey rampart, south side). Probable date of context: *c.* A.D. 1068-1075.

Fairly hard, rough micaceous fabric, dark grey (between 10YR 4/1 and 3/1) throughout. Thin sectioning shows large discrete grains of quartz, up to 2.50mm across, and felspar, mostly potash, together with frequent strands of mica, mostly muscovite, some iron ore, sandstone, a few small fragments of granite and larger pieces of a volcanic rock, composed principally of felspar microlites set in a dark brown altered matrix. The composition and condition of the volcanic rock suggests an origin in the Permian rocks of Devon, in particular those of the Exeter district (Tidmarsh, 1932).

LC Fabric 1B/C: Bar-lug fabric without white mica.

Sherd 2: from ZJ(140), bag(2041). Period 1: 2nd Phase (lowest level of activity at the rear of the first bailey rampart, south/west side). Probable date of context: *c.* A.D. 1068-1075. Hard, rough fabric, with visible inclusions of white felspar, smoothed on the dark grey (7.5YR N3/) outer surface, lighter grey inner surface and core. Thin sectioning shows angular grains of partly decomposed felspar, some of which has altered to sericite, fresher plagioclase and colourless or brown grains of amphibole, both fibrous aggregates and discrete grains, together with pyroxene, quartz and serpentine. This range of inclusions closely matches David Peacock's

(1969) description of the natural weathering clays that overly the gabbro formations at the Lizard Head, Cornwall, and there seems little doubt that this is the source of the raw materials involved in the manufacture of this vessel.

LC Fabric 1C: Grass-marked fabric

Sherd 3: from ZR(712), bag(4424). Period 1: 2nd Phase (sunken-floored building within the bailey). Probable date of context: *c.* A.D. 1068-1075. Soft, rough fabric with frequent organic impressions on the outer surface, grey (between 5YR 5/1 and 7.5YR 4/) throughout. In thin section, the range and texture of the inclusions present in this sherd are virtually identical to those described for Sherd 2 above, and therefore this vessel can also be attributed to the gabbroic outcrop on the Lizard.

A grass-marked sherd made of gabbroic clay recovered from late twelfth century A.D. contexts in Southampton has previously been noted by Peacock (1975), showing that this particular pottery production centre lasted well into later Mediaeval times.

LC Fabric 2A: "Norman chert-tempered"

Sherds 4 and 5: from NGW(49), bag(3697) A and B. Period 1: 2nd Phase (stake-holes and hearth beneath the first bailey rampart, north side; this first rampart on the north probably equates with the second rampart on the south). Probable date of context: *c.* A.D. 1068-1075. Sherd 4: hard, rough sandy fabric with visible inclusions of chert, light grey (2.5Y N7/) outer surface, darker grey inner surface and core. Thin sectioning shows large inclusions of chert, some of it brown-stained, scattered throughout the clay matrix, together with grains of quartz and quartzite and some flecks of mica. Sherd 5: hard, rough sandy fabric with visible inclusions of chert, greyish-buff (between 7.5YR 6/2-7/4) outer surface, buff (7.5YR 7/4) inner surface and dark grey core. Thin sectioning shows a similar range of inclusions to Sherd 4.

Chert is commonly found in the Launceston area, so a local origin would be entirely possible. However, chert-tempered pottery is also found on other sites of a similar date in the South-West (Allen and Perry, 1982, 88). A south-east Devon or Somerset origin has been suggested for this ware (Preston-Jones and Rose, 1986, 177), but unfortunately there is nothing in the Launceston sherds which will allow a more precise allocation of source.

LC Fabric 2A: "Norman chert-tempered"

Sherd 6: from ZR(704), bag(4417). Period 1: 2nd Phase (sunken-floored building within the bailey). Probable date of context: *c.* A.D. 1068-1075. Hard, rough sandy fabric, light red (2.5YR 6/8) surfaces, light grey core. Thin sectioning shows a similar range of inclusions to Sherd 4.

LC Fabric 2A: "Norman chert-tempered"

Sherd 7: from ZP(145), bag(3803). Period 2: 2nd Phase (first phase of stone buildings within the bailey). Probable date of context: *c.* A.D. 1100/1110-1141/1175. Hard, rough sandy fabric with visible inclusions of chert, reddish grey (5YR 5/2) outer surface, dark grey inner surface and core. Thin sectioning shows a similar range of inclusions to Sherd 4.

LC Fabric 2A: "Norman chert-tempered"

Sherd 8: from ZP(143), bag(3801). Period 3: 2nd Phase (second phase of stone buildings within the bailey). Probable date of context: *c.* A.D. 1141/1175-1227/1240. Hard, rough sandy fabric with visible chert inclusions,

red (10R 5/6) outer surface, dark grey inner surface and core. Thin sectioning shows a similar range of inclusions to Sherd 4.

LC Fabric 2B: "Norman slate-tempered"

Sherd 9: from ZN(76), bag(2120). Period 1: 4th Phase (make-up of the second bailey rampart, south side). Probable date of context: *c.* A.D. 1075. Fairly hard, smoothish fabric, burnished on the outer surface, visible inclusions of dark coloured slates on the inner surface, dark grey (10YR 4/1) outer surface, light red inner surface and light grey core. In thin section the most prominent inclusions consist of frequent pieces of fine-textured slate scattered throughout a fairly clean clay matrix. Also present are flecks of mica, a little quartz and quartzite and a few small pieces of chert.

Deposits of Devonian slates can be found within a short distance of Launceston, and so in the absence of additional evidence it is quite possible that this sherd (together with Sherds 9-11, and 13) could be a local product.

LC Fabric 2B: "Norman slate-tempered"

Sherd 10: from ZR(116), bag(3440). Period 2: 2nd Phase (first phase of stone buildings within the bailey). Probable date of context: *c.* A.D. 1100/1110-1141/1175. Thin sectioning shows a similar range of inclusions to Sherd 9, but this sample is in a slightly coarser fabric with more frequent grains of quartz and quartzite.

LC Fabric 2B: "Norman slate-tempered"

Sherd 11: from ZR(116), bag(3485). Period 2: 2nd Phase (first phase of stone buildings within the bailey). Probable date of context: *c.* A.D. 1100/1110-1141/75. Hard, rough fabric with frequent visible inclusions of dark coloured slate and some quartzite, light red (10R 6/8) surfaces, light grey core. Thin sectioning shows a similar range of inclusions to Sherd 10.

LC Fabric 2B: "Norman slate-tempered"

Sherd 12: from 24/969. Period 3: 2nd Phase (demolition of a 12th century stone hall). Probable date of context: *c.* A.D. 1200-1220. Hard, rough sandy fabric, light greyish-buff outer surface (between 7.5YR 7/4 and 10YR 6/1),

light grey (10YR 7/2) inner surface and dark grey core. In thin section there appear to be no inclusions of slate in this fabric. Instead, there are fragments of chert and subangular grains of quartz, similar to Sherds 4-8, but with a much cleaner clay matrix.

LC Fabric 2B: "Norman slate-tempered"

Sherd 13: from ZR(102), bag(2940). Period 4: 1st Phase (latest addition to the rampart - this sherd could be residual). Probable date of context: *c.* A.D. 1227-1240. Hard, rough coarse fabric, with numerous inclusions of dark coloured slates, reddish-brown (2.5YR 5/4) outer surface, very pale brown (10YR 8/3) inner surface and dark grey core. Thin sectioning shows a similar range of inclusions to Sherds 9-11.

LC Fabric 4A: Standard Mediaeval - `West Country gritty ware'. By far the most plentiful fabric on the site.

Sherd 14: from 24/1441. Period 4: 1st Phase (construction

of the Great Hall). Probable date of context *c.* A.D. 1227-1240. Very hard, sandy fabric, buff (7.5YR 7/4) surfaces and grey core. Thin sectioning shows a varied range of inclusions, consisting of discrete grains of orthoclase and occasional plagioclase felspar, quartz, mica and tourmaline, with fragments of slate, sandstone, siltstone and iron ore, all set in a hard fired clay matrix.

This mixture of metamorphic and sedimentary rocks, together with minerals derived from igneous material (probably granite), resembles that described for `North Devon gravel-tempered ware' and associated ceramics, thought likely to have been made in the area of the Torridge Valley (Keen, 1969; Vince, 1978; Vince and Brown, 1982), where a late thirteenth century kiln has recently been discovered (Riddler, 1989). A similar origin is possible for the Launceston vessel.

LC Fabric 4A: Standard Mediaeval - `West Country gritty ware'.

Sherd 15: from ZR(93), bag(3327). Period 4: 3rd Phase (soil build-up at the rear of the bailey rampart). Probable date of context: *c.* A.D. 1227/1240-1345/1350. Hard, rough sandy ware, dark buff (7.5YR 7/4) outer surface, grey inner surface and central core. Thin

sectioning shows a similar range of inclusions to Sherd 14.

LC Fabric 4A: Standard Mediaeval - `West Country gritty ware'.

Sherd 16: from ZR(89), bag(2865). Period 4: 3rd Phase (soil build-up at the rear of the bailey rampart). Probable date of context: *c.* A.D. 1227/1240-1345/1350. Very hard, rough sandy fabric, buff (7.5YR 7/4) surfaces, light grey central core. Thin sectioning shows a similar range of inclusions to Sherd 14.

LC Fabric 4A: Standard Mediaeval - `West Country gritty ware'.

Sherd 17: from ZR(93), bag(2908). Period 4: 3rd Phase (soil build-up at rear of the bailey rampart). Probable date of context: *c.* A.D. 1227/1240-1345/1350. Hard, rough sandy fabric, buff (7.5YR 7/4) surfaces, light grey central core. Thin sectioning shows a similar range of inclusions to Sherd 14.

LC Fabric 4D: "Developed Norman". Similar to Fabric 2A but always hard-fired; seems to continue into the 14th century.

Sherd 18: from NGW(33), bag(3705). Period 4: 1st Phase (levelling-up prior to general re-build). Probable date of context: *c.* A.D. 1227-1240. Hard, gritty fabric containing visible inclusions of chert and quartz grains, dark grey (2.5YR N4/) surfaces, red and grey core. Thin sectioning shows a chert dominated fabric similar to that described for Sherds 4-8 and 12.

LC Fabric 6B: "Gritty jugs"

Sherd 19: from ZR(38), bag(2755). Period 5: 3rd Phase (garden soil build-up - the sherd could be residual). Probable date of context: *c.* A.D. 1462-1500. A beaded-rim sherd in a very hard, sandy fabric, dark green (5Y 4/3) glaze on the outer surface running over the lip, buff (7.5YR 7/2) inner surface and light grey core. Thin sectioning shows little else but frequent subangular quartz grains ranging up to 1.5mm in size, flecks of mica and some argillaceous material, making a prediction of source difficult.

LC Fabbric 6B: "Gritty jugs"

Sherd 20: from ZT(1), bag(3966). Period 5: 3rd Phase (garden soil build-up - the sherd could be residual). Probable date of context: *c.* A.D. 1462-1500. Part of a handle in a very hard, rough sandy fabric, dark green (5Y 5/6) glaze on the upper handle, otherwise dark buff (7.5YR 7/8) with a light grey core. Thin sectioning shows a fairly similar range of inclusions to Sherds 14-17, but in a more coarser, harder fired fabric with a greater frequency of quartz grains.

LC Fabric 7A: "Tamar Valley"

Sherd 21: from NGW(18), bag(3419). Period 5: 2nd Phase (dumped soil above the foundations of the North Gatehouse). Probable date of context: *c.* A.D. 1337/1376-1450/1475. Part of a handle in a hard, rough sandy fabric, with small dark coloured plates of biotite mica which give it a distinctive appearance, light red surfaces (2.5YR 6/8), light grey core. Thin sectioning shows a groundmass of silt-sized quartz grains, with frequent strands of large biotite and smaller muscovite mica, together with grains of plagioclase and orthoclase

felspar, some tourmaline and pieces of slate.

The hand-specimen description of this sherd (and Sherds 22 and 23 below) appears to have much in common with that usually applied to St. Germains ware from the Tamar Valley (Gaskell-Brown, 1979; Allen, 1984). However, a detailed report on the petrological examination of the products of this kiln is still awaited (see for example Vince and Brown, 1981, 136, whose attempts to characterize this ware proved unsuccessful).

LC Fabric ZA: "Tamar Valley"

Sherd 22: from ZR(1), bag(2943). Period 5: 3rd Phase (garden soil build-up). Probable date of context: *c.* A.D. 1462-1500. Fairly hard, rough sandy micaceous fabric, similar in the hand-specimen to Sherd 21, light red (2.5YR 6/8) throughout. Thin sectioning shows a fairly clean clay matrix containing large strands of biotite and smaller muscovite mica, together with subangular grains of quartz, a few grains of felspar and tourmaline and some small pieces of granite.

LC Fabric ZA: "Tamar Valley"

Sherd 23: from CM(89), bag(466). Period 5: 2nd Phase

(silt high in the inner moat). Probable date of context: *c.* A.D. 1400-1425. Thin, hard, slightly rough sandy and somewhat micaceous fabric, reddish-yellow surfaces (5YT 7/6), thin dark grey central core. Thin sectioning shows a fairly fine-textured clay matrix containing subangular grains of quartz, small flecks of biotite and muscovite mica, a few grains of tourmaline and orthoclase felspar, and several small fragments of slate, mudstone and granite.

LC Fabric ZB: "Fowey Valley"

Sherd 24: from ZR(51), bag(2841). Period 5: 3rd Phase (garden soil build-up). Probable date of context: *c.* A.D. 1462-1500. Hard, rough sandy fabric with some biotite mica visible, light red (2.5YR 6/8) surfaces,dark grey core. In thin section this sherd displays a similar range of inclusions to Sherd 23, though with a coarser texture, and may well share a common origin.

LC Fabric 8RTE: Ridge tile - "Fowey Valley"

Sherd 25: from 24/732. Period 4: 1st Phase (construction of the Great Hall). Probable date of context: *c.* A.D. 1227-1240. Very hard, thick rough sandy fabric with distinctive silver plates of mica scattered throughout, light red surfaces (5YR 7/6), dark grey core. Thin sectioning shows plentiful large flakes of muscovite mica, with some biotite, together with subangular quartz grains, tourmaline, small fragments of tourmaline-granite and slate.

The petrology suggests an origin in an area closeby to deposits of tourmaline-granite and pelitic rocks. This quite nicely describes the course of the River Fowey, for the river runs near to the granites of Bodmin Moor and also through Devonian formations which include slates (Geological Survey 1" Map of England Sheet no. 347). It is quite feasible, therefore, that this area could be the origin of the ridge tile, though other areas might also qualify on this basis.

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