Ancient Monuments Laboratory
Report 207/88

PETROLOGICAL EXAMINATION OF ROMAN TILES FROM EXETER AND OTHER DEVON SITES.

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Summary

Thin section analysis of a group of Roman tiles suggests the following: (1) a fabric which was almost certainly made at Exeter, (2) a similar fabric found at some auxiliary forts may represent supplies of tiles from Exeter, (3) late in the third century A.D. a quite different tile fabric occurs at Exeter, at present source unknown, and (4) tiles from a number of civil sites in Devon show a wide variety of fabrics, implying tile production at many places rather than at one or two large centres.

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PETROLOGICAL EXAMINATION OF ROMAN TILES FROM EXETER AND OTHER DEVON SITES

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Introduction

Samples of four representative Roman tiles from recent excavations at Exeter were submitted for a detailed fabric examination in thin section under the petrological microscope. The main objective of the analysis was twofold: (1) to confirm the validity of a provisional grouping in the hand-specimen of these tiles into separate fabrics, and (2) if possible to confirm a local Exeter origin for some, at least, of the tiles. The manufacture of tiles in the vicinity of the fortress is suspected (Bidwell, 1980, 40). In addition, samples of tiles from the auxiliary military sites at Tiverton, Okehampton and North Tawton were also submitted, to see if it could be shown that they emanated from the postulated Exeter tilery. At the same time Roman tile material from the civil sites at Seaton, Holcombe, Plymouth, Woodbury and Newenham were examined to see if the fabrics were similar to those tiles from the above military sites or suggested different sources. All the samples submitted were initially studied macroscopically with the aid of a binocular microscope (x20). Munsell colour charts are referred to, together with free descriptive terms.

Petrology and Fabric

1). Exeter 1 BSE 80 F183

Hard, rough sandy fabric, dark red (10R 4/6) throughout.

2). Exeter 2

Very hard, rough sandy fabric, deep reddish-brown (2.5YR 4/4) throughout.

3). Exeter 3

Hard, rough coarse fabric, light reddish-orange (between 5YR 7/6 and 2.5YR 6/6) throughout.

In thin section all three tiles show a fairly similar range of non-plastic inclusions: frequent subangular grains of quartz, flecks of mica, sandstone, chert, siltstone, altered igneous rock, shale, quartzite and some iron ore. There are, however, some differences in texture, sample 3 is much coarser than the other two, with sample 2 being the finest-textured of the three. Due to their frequency at the site, tiles of Exeter 1 fabric are thought likely to have been made in the suspected local tilery. Exeter lies on Triassic and Permian Breccia and Conglomerate deposits, with Lower Sandstone and Culm Measures (Carboniferous) closeby. It is difficult to tie down the exact source of clay likely to have been utilized for the Exeter 1 tiles, in recent times the brickworks at Exeter have used the clays from the Lower Sandstone for their bricks (Ussher, 1902). The differences in texture of Exeter 2 and Exeter 3 should not necessarily preclude a non-local origin, as a more-or-less similar range of inclusions that appear in Exeter 1 are also to be found in these two samples. It is possible, for example, that they were made at a slight later date to Exeter 1 when slightly different clay beds were used.

It is worth noting that a fairly similar range of non-plastic inclusions have also been found in pottery from the Saxo-Norman kiln in Bedford Street, Exeter, adding weight to the idea of a local origin for the Roman Tiles (Williams, forthcoming).

4). Tiverton TV 86 ML (11) 9

Soft, fairly smooth sandy fabric, light red (2.5YR 6/8) throughout.

5). Okehampton Fort

Soft, crumbly rough fabric, light red (between 2.5YR 6/8 and 5/8) throughout.

6). North Tawton

Soft, crumbly coarse fabric, red (2.5YR 5/8) throughout.

7). Exmouth 77

Small fragment of a hard, ?roller-paterned tile, red (between 2.5YR 6/8 and 5/6) throughout.

All four tiles have a fairly similar range of non-plastic inclusions to the three tiles from Exeter described above (nos. 1-3). It is possible, therefore, that these four tiles may well have been made in or near Exeter and carried to each of the find-sites, the first three of which are auxiliary forts which were controlled by the legionary fortress at Exeter. If this is the case, then they may have been regarded as 'military supplies'. However, from this examination of a limited range of material it is not possible to be absolutely sure that Exeter was indeed the source for these tiles, since many of the inclusion-types mentioned can be found in the vicinity of the find-sites and a more local origin cannot yet be ruled out.

8). Exeter 4 RS 1357

Hard, rough fabric, light reddish-brown (2.5YR 6/4) throughout.

9). Seaton 2 SEA 69

Soft, roughish fabric, light grey (10YR 7/2) throughout.

In thin section both tiles display a fairly fine-textured clay matrix with slender curved pieces of fossil shell and cryptocrystalline limestone, and a few scattered grains of quartz. This particular fabric is clearly quite different to the other tiles sampled from Exeter, and apparently appears late in the series, i.e. second half of the third century A.D. (Bidwell, 1979, 153). At present it is difficult to suggest a likely origin.

10). Newenham 1

Hard, rough sandy fabric, light reddish-brown (between 5YR 5/3 and 6/3) surfaces, light red (2.5YR 6/8) core. Thin sectioning shows frequent well-sorted subangular grains of quartz up to 0.30mm in size, together with flecks of mica, a little sandstone, iron ore, chert and a scatter of reddish-brown grains of glauconite. The presence of glauconite suggests an origin in the Upper Greensand, the nearest such deposits to Newenham lie some three miles to the north of the site (1" Geological Survey Map Sheet no. 326).

The following samples contain a fairly common range of non-plastic inclusions, principally quartz and limestone, where it is not possible on this evidence to place their origin with any certainty. Many no doubt were made fairly closeby to the find-site, but this cannot be proved as yet. What these results clearly show is that the tiles did not come from one or two large centres. Instead, they appear to have made at many different places, with a variety of fabrics often occuring at the same site.

11). Newenham 2

Hard, rough red fabric, with small white limestone inclusions scattered throughout, light buff (7.5YR 7/4) throughout. Thin sectioning shows a clay matrix packed with small, fairly well-rounded fragments of cryptocrystalline limestone. Also present are a number of subangular quartz grains.

12). Woodbury 1 WOY 81 T230

Hard, fairly smooth fine-textured fabric, light red (2.5YR 6/8) throughout.

13). Woodbury 2.

Fairly hard, smooth fine-textured fabric, light grey (2.5Y 6/2) throughout.

Thin sectioning shows that both tiles have a fine-textured clay matrix containing a groundmass of silt-sized quartz grains under 0.05 mm across and a scatter of slightly larger grains, together with small flecks of mica and a little iron ore.

14). Woodbury 3 WOY 81 64

Very hard, roughish sandy fabric, dark grey (10YR 5/) surfaces, deep reddish-brown (2.5YR 4/4) core. Frequent well-sorted subangular grains mostly under 0.30mm in size, flecks of mica and some iron ore.

15). Seaton 1

Hard, somewhat fine-textured fabric, red (10R 6/8) throughout. Thin sectioning shows a fairly fine-textured clay matrix containing a groundmass of silt-sized quartz grains mostly under 0.05mm across, some flecks of mica and a little iron ore.

16). Seaton 3 A69 (121)

Soft, smoothish fairly fine-textured somewhat micaceous fabric, light red (2.5YR 6/8) throughout. Thin sectioning shows a fabric packed with small well-sorted quartz grains usually under 0.05mm in size and flecks of mica, with a little iron ore.

17). Plymouth 1

Hard, roughish slightly sandy fabric, light grey (2.5Y 7/2) surfaces, pale yellow (2.5Y 7/4) core. Thin sectioning shows a fine-textured clay matrix containing a scatter of subangular quartz grains ranging up to 0.60mm across.

18). Plymouth 2

Hard, rough coarse fabric, red (2.5YR 5/6) throughout. Thin sectioning shows frequent well-sorted quartz grains mostly under 0.10mm in size and a scatter of fairly well-rounded fragments of siltstone, plus a little quartzite, iron ore and some flecks of mica.

19) Holcombe 1

Hard, smoothish fine-textured fabric, light red (2.5YR 6/8) throughout. Thin sectioning shows a fine-textured clay matrix containing a scatter of subangular quartz grains normally under 0.10mm in size, a little mica and fragments of red iron ore.

20). Holcombe 2

Very hard, sandy fabric, reddish-brown (5YR 4/3) surfaces, dark grey (2.5YR 4/) core. Thin sectioning shows frequent well-sorted quartz grains mostly under 0.20mm in size, some flecks of mica, iron ore and quartzite.

21). Holcombe 3

Hard, fairly smooth fabric, light buff (7.5YR 7/4) throughout. Thin sectioning shows a fine-textured clay matrix containing a scatter of subangular quartz grains mostly under 0.020mm in size and small fragments of cryptocrystalline limestone, together with some flecks of mica, chert and a little argillaceous material.

References

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