

PETROLOGICAL EXAMINATION OF ROMAN BRICK AND TILE FROM
 LAKE FARM, NEAR WILBORNE, DORSET

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A small number of brick and tile fragments from Periods I, II and III at the early Roman vexillation fortress at Lake Farm (occupied c. A.D. 45-c.65) were submitted for petrological analysis, together with two samples of clay from pit fills at the site. The main objective of the analysis was to see if the brick and tile could have been made locally, perhaps from similar clays to those found in the pit fills.

Examination with a hand lens suggested that the fragments of brick and tile could be divided into two broad fabric divisions. This fabric grouping was supported by subsequent petrological analysis.

Fabric 1 PM20/2A 191 (Period III), PM20/2A 171 (Period III), PM20/2 113 (Period III), PM20/1 6 - large fragment - (Periods I-III), PM20/1 9 - one fragment - (Periods I-III).

Moderately hard to soft rough sandy fabric, light red (Munsell 2.5YR 6/8) to dark red (10R 5/8) in colour. Thin sectioning and study under the petrological microscope of samples from 191, 171 and 113 showed a groundmass of frequent quartz grains, average

size 0.05-0.15mm, together with a scatter of larger grains up to 0.80mm across. Also present were some quartzite, flecks of mica, chert and iron ore. Sample 113 contained slightly more quartz grains than the other two samples. A heavy mineral separation of samples from 171 and 113 produced an assemblage which consisted of a high proportion of opaque grains, mostly magnetite. The non-opaques were composed largely of grains of zircon, together with smaller amounts of apatite, andalusite and kyanite.

Fabric 2 PM20/1 6 - two small fragments - (Periods I-III), PM20/1 9 - three fragments - (Periods I-III), PM20 7 30 (Period II).

Predominantly a fairly hard rough fabric, slightly less sandy than Fabric 1 and light buff (10YR 8/4) to light grey (10YR 7/2) in colour. The lighter colour of these bricks and tiles might be due to a less high iron content in the clay than is the case for Fabric 1, suggesting the possibility of a different clay being used. Thin sectioning of samples 6, 9 and 30 revealed a finer-textured clay matrix than for Fabric 1, with quartz grains up to 0.10mm and below in size, together with a scatter of larger grains up to 0.80mm across. Also present were chert, quartzite, flecks of mica and iron ore. A heavy mineral separation of samples from 9 and 30 produced only a small number of non-opaques: zircon, apatite and rutile were identified, the assemblage being dominated by opaque grains, mostly magnetite.

The two clay samples submitted, one a light yellowish-brown (A) in colour and the other a pinkish-grey (B), were both baked and

then subjected to thin sectioning and heavy mineral separation for comparison with the brick and tile samples analyzed. In thin section clay sample (A) was seen to contain a groundmass of abundant quartz grains up to 0.15/20mm in size, with a scatter of larger grains up to 0.80mm across, together with some chert, quartzite, iron ore and flecks of mica. In contrast clay sample (B) appeared much more finer-textured in thin section, with a slight groundmass of quartz grains, average size 0.05mm and below, and a sparse scatter of larger grains up to 0.60mm across. Also present were flecks of mica, siltstone and iron ore. A heavy mineral separation of both samples produced assemblages dominated by opaque grains, mostly magnetite. However, whereas clay sample (A) also realized a crop of non-opaques headed by grains of zircon, together with apatite, andalusite, kyanite and rutile, clay sample (B) produced only a few grains - zircons.

The size and frequency of the quartz grains in Fabric 1 compare favourably with those present in clay sample (A), and there is general agreement also in the types of heavy minerals recorded for both sets of samples. The clay sample is coarser-textured than the brick and tile, but it would be unusual if some treatment and refinement of the clay had not been undertaken before the brick and tiles were constructed. The fine-texture of clay sample (B) makes it difficult to compare with Fabric 2. The heavy minerals are unhelpful here, both sets of analyzes producing so few non-opaques.

The types of heavy minerals recorded in Fabric 1 and 2 point to a Tertiary origin. There is therefore nothing to suggest that the brick and tiles were not made near to the find-site, indeed

there are various sand and clay formations in the general area which have proved suitable for brick and tile manufacture at later periods (White, 1917). The presence within the fortress of a sample of clay (A) which compares well with Fabric I might suggest that these items were made nearby. However, the evidence is not conclusive, and a more distant source is also possible.

Reference

White, H.J.O. (1917) The Geology of the country around Bournemouth Mem. Geol. Soc. (London, 1917).