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1981

Ancient Monuments Laboratory
Report 83/88

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Summary

Thirteen small sherds of Neolithic pottery were examined in thin section for an analysis of the fabrics involved. On the basis of the range of non-plastic inclusions present in the sherds a number of fabric divisions were made: (1) Gabbroic, (2) Ferruginous inclusions, (3) Quartzite, and (4) Tourmaline. It is probable that only the gabbroic sherds were imported from any great distance to the find-site.

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A NOTE ON THE PETROLOGY OF SOME NEOLITHIC POTTERY FROM HELMAN TOR, LANLIVERY, CORNWALL

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Introduction

A small number of Neolithic pottery sherds from the recent excavations at Helman Tor were submitted for a fabric examination in thin section under the petrological microscope. The main object of the analysis was to confirm the validity of a provisional identification of sherds in the hand-specimen and allocation to fabric groups. Helman Tor is situated on the granite on the south-east edge of Bodmin Moor, fairly close to metamorphosed calcareous rocks (calc-flinta) surrounding the granite mass of the moor (Geological Survey 1" Map of England Sheet no. 347).

Petrology

On the basis of the range of non-plastic inclusions present in the sample sherds from Helman Tor, a number of fabric divisions are suggested.

Fabric A : Gabbro

519e

668a

687

66

517a

The most prominent inclusions in all five sherds are made up of partly decomposed felspar, some of which has already altered to sericite, fresher plagioclase and colourless or brown grains of amphibole, many of which appear as fibrous aggregates. Also present is a little pyroxene, serpentine and some grains of quartz. Samples 66 and 517a appear to be slightly finer-textured than the other three sherds. This assemblage closely resembles Peacock's (1969a; 1969b) description of the natural weathering clays overlying the gabbro on the Lizard Head, Cornwall.

During the prehistoric and Roman periods 'gabbric' pottery is found over much of Cornwall and the surrounding areas. Indeed, outliers of the Iron Age 'Glastonbury ware' have been found as far away as Chilgrove in Sussex (Cunliffe, 1979) and Weekley in Northamptonshire (Williams and Jackson, 1977). In the vast majority of cases the identification of this pottery has followed Peacock's suggestion of a Lizard source (ibid.). However, Sofranoff has questioned the generally accepted Lizard source of 'gabbroic' pottery in her examination of the Neolithic pottery from the Cornish site of Carn Brea (1981; quoted more recently by Quinnell, 1987). Although in thin section the range of mineral inclusions in the Carn Brea pottery was closely matched to Peacock's description of 'Lizard' gabbroic wares, the heavy mineral results on these same sherds produced a residue almost completely taken up with the micas biotite and phlogopite (ibid., 180-181). This prompted Sofranoff to suggest 'a possible norite gabbro source which is not described in the sheet memoir for the Lizard and Meneage' or 'a source of the biotite other than the gabbro, i.e., the granites, etc.' (ibid., 180), and to sow seeds of doubt about the Lizard source for this distinctive plutonic fabric (see for example the report by Smith on the Neolithic pottery in the same excavation report, 178-179; also Quinnell, 1987, 11).

In David Peacock's rejoinder to Sofranoff's note (forthcoming), he points out the peculiarity of a pottery fabric which in thin section is particularly high in amphiboles and lacks mica and yet which at the same time produces a heavy mineral suite which almost exactly reverses this situation, i.e. lots of micas and very little amphiboles. It is salutary to note that a re-examination by him of Sofranoff's Carn Brea heavy mineral slides revealed no micas. Furthermore, a heavy mineral separation on Neolithic 'gabbroic' pottery from Maiden Castle carried out by the writer (A.M. Lab. report no. 34/87) produced a residue which contained a high tenor of amphiboles and no mica, as would be anticipated given the thin section results. It would appear then, on this evidence, that Sofranoff misidentified the amphiboles in the Carn Brea sherds.

All this suggests that the 'gabbroic' pottery from Helman Tor derives from the gabbro outcrop on the Lizard, as originally postulated by Peacock. It is interesting to note that some recent non-petrological analysis of English gabbroic pottery would seem to provide additional evidence for this view (see Freestone, 1982; Freestone and Rigby, 1982).

Fabric B : Ferruginous inclusions

122

340

350b

599c

All of these sample sherds (599c may possibly be a lump of clay) contain reddish opaque oxides scattered throughout the fabric. Also present are some grains of quartz, flecks of mica, felspar, quartzite and fine-grained silica. Ferruginous gravels have been noted on Red Moor just to the north-east of Helman Tor (Ussher et al, 1909, 119), and so it seems quite possible that these sherds may well prove to be locally made.

Fabric C : Quartzite

474c

685b

White inclusions of quartzite can be clearly seen in the hand-specimen in these two sherds. Thin sectioning confirms that quartzite is the dominant inclusion-type in the paste, some of the pieces reaching over 2mm in size, together with a little quartz, flecks of mica and fine-grained silica. It is difficult to be certain of the origin of these two sherds, but the presence of a contact metamorphic zone fairly close to the east of Helman Tor suggests that this may be a possible source for the quartzites in the paste of these two vessels.

Fabric D : Tourmaline

28

377

Both sherds contain fairly frequent discrete grains of tourmaline scattered throughout the fabric, together with some flecks of mica (including large grains of biotite), a few large angular grains of quartz and opaque oxides. Tourmaline is commonly found in the granites of the south-west, is also present in other igneous rocks of the region and has even been found in the calc-flinta rocks of the metamorphic contact zone (ibid.). In the absence of any other evidence a fairly local origin would seem to be suggested.

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