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THE FINDS

10.3.9 Laser Scanning Confocal Microscopy and Raman Spectroscopy of the antler drum (SF278)

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Laser Scanning Confocal Microscopy (LSCM) was used to create a high resolution three-dimensional surface map of the antler drum SF278 (illus 10.27), which revealed that three different points had been used to incise the motifs (Evans et al 2012; Maxwell et al 2012). The subtle, but sporadic, variations in depth and width readings from each inner ring profile further suggests the use of compass tools that would have been sensitive both to differential pressure applied by the human hand, and resistance provided by the antler surface. The three different ring profiles (illus 10.27) may have resulted from the sharpening of a bevelled point between motifs, or the use of more than one compass point (Evans et al 2012: 129–30). Potentially, this may have involved the input of more than one individual, each with their own personal toolkit.

A black stain in one of the outer rings of the same object was examined in order to characterise the pigment. Raman spectroscopy revealed that a black vegetal-carbon based pigment had been used to enhance the visual appearance of the ring-and-dot motifs, contrasting with the creamy-white antler surface (Maxwell et al 2012).

10.4 Coarse stone

10.4.1 The rotary quern stones

DAWN McLAREN (geological identification by the late G H COLLINS)

OVERVIEW

Fragments of 36 rotary quern stones (in 41 pieces), and a possible further example, were recovered during excavations at Broxmouth. This represents the largest assemblage of rotary quern stones from East Lothian and one of the largest groups of querns from Iron Age Scotland.

The Broxmouth assemblage includes both upper and lower stones of bun-, disc- and beehive-shaped querns, and shows a range of handling systems, levels of wear and post-use treatment. A significant number of the querns from the site were substantially complete. There are also six unfinished querns amongst the assemblage, abandoned in varying stages of manufacture. In general, the querns at Broxmouth complement the wider picture of later prehistoric rotary quern use in East Lothian. Yet many significant and unusual aspects of rotary quern production, use and deposition have been noted within the assemblage and will be discussed further below. These include a quantity of unfinished querns, the presence of various handling systems, decoration, and evidence for the deliberate destruction of at least one stone.

ASPECTS OF MANUFACTURE AND USE

Form and condition

The significant quantity of rotary quern stone fragments at Broxmouth reflects the large scale of the excavation. It has not been possible in all cases to identify whether an upper or lower stone is present, due to the level of fragmentation and post-depositional damage, but of those which are known, similar quantities of upper (15) and lower stones (12) are represented. The greater number of upper stones is typical, as these are more easily identified than lower stones due to the presence of distinctive features such as handle sockets and hoppers.

All three of the major rotary quern types known in Scotland (disc-, bun- and beehive-shaped querns) are present at Broxmouth. The difference between the three types is based on the shape and form of the upper stones. Disc-shaped querns are thin, wide stones with flat upper surfaces. This contrasts with the generally smaller bun-shaped stones, which are much thicker in proportion to their diameter and have distinct rounded