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IDENTIFICATION OF COPPER ALLOYS AND
INLAYS FROM THE SAXON SMITH'S BURIAL
AT TATTERSHALL THORPE, LINCOLNSHIRE

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Summary

Copper alloy and garnet inlays from the Saxon smith's burial at Tattershall Thorpe were examined and analysed using XRF analysis and determinative spectroscopic methods. XRF analysis found the most common alloy to be leaded tin-bronze.

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Identification of copper alloys and inlays from the Saxon Smith's burial at Tattershall Thorpe, Lincolnshire.

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Introduction.

As part of the continuing post-excavation analysis of the 'smith's' burial at Tattershall Thorpe, Lincolnshire, a small number of XRF (X-ray fluorescence) analyses were conducted on some copper alloy objects. In addition to this some unmounted and mounted red stones used as an inlay in these copper alloy objects were also identified.

Analysis and Results

The following objects were analysed.

Find Number	Identification
7	Stud with triskele ornament, possibly enamelled
9	Hinge, possibly enamelled.
133G	Copper alloy strip.
8B	Inlaid buckle plate.
18	Red stones.
112,117	Red stones.

All but one copper alloy object analysed by XRF was leaded bronze with a trace of antimony and possibly arsenic. The stud with triskele ornament had a higher zinc content and may be considered a leaded gunmetal (an alloy of Cu, Zn, Sn and Pb).

It was suspected that the red stones were garnets, although it is possible that they may be glass. Unfortunately, it is difficult to differentiate between glass and garnet using qualitative XRF as they are both silicates. However, microscopic examination of the red stones revealed inclusions oriented along planes of the crystal lattice. In addition, observing the transmitted spectra from the stones using a hand-held direct spectroscope revealed characteristic absences in the yellow region, this is considered diagnostic for garnets.

Conclusions

XRF analysis of the copper alloys revealed that most were leaded tin-bronze with traces of antimony and possibly arsenic. However, Object 7, a stud with triskele ornament, had higher levels of zinc and is therefore a leaded gunmetal.

The red stones used in inlays were identified, using microscopic examination and transmitted spectroscopy, as garnets.

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