

CONSERVATION TREATMENT RECORD

Lab number: 8141
Brief description: Cu Alloy Object
Name of owner: Martin Millet, Thwing Excavation
Owner's number: T05/16, 172

Name of student: Nyssa Mildwaters
Date allocated: 13th December 2006
Date completed: 16th March 2007

Material type - Unidentified copper alloy object of indeterminate composition, though exhibiting the characteristic green malachite corrosion layer.

Dimensions - The object is curved in shape with a circular head at one end below which are three incised bands of an apparently uniform width and thickness. The object then curves gently diminishing slightly in width to an open end with two opposing areas of protruding slightly which suggests that the object was a terminal of some kind, though to what is unclear. The object measures 31.0 mm from tip to tip and the circular head has a diameter of approximately 5.9 mm in diameter, finally the whole object weighs 3.25g before treatment and 3.24g after treatment.

Technology - Though there is no evidence of manufacturing technology currently visible, the uniform width and thickness of the incised bands in particular suggest that the object may have been cast rather than shaped.

Condition -

Before treatment - The first and most obvious problem relating to the object was the relatively limited layer of soil adhering to the objects surface (Figures 1 and 2), as the presence of the soil on the surface of the metal may have helped promote further corrosion (Scott. 2002). Though in those areas free of soil the object appeared to be in a stable condition with an apparently uniform layer of the corrosion product malachite present, and no obvious areas of active corrosion. Second problem as discussed below is that x-rays of the object show the presence of a crack running through the object. However the crack was masked by the overlying soil and thus though the crack did not appear to compromise the objects overall structural integrity it was hard to evaluate this effectively whilst the soil was still in place. Out side of these specific problems the object did appear to be in relatively robust condition.

After Treatment - The object has been cleaned of all soil adhered to its surface and from the open end of the terminal (Figures 3 and 4). Revealing more clearly the crack evidence in the x-rays taken before treatment, though the crack does run for approximately 5 mm through the object it does not appear to threaten the structural integrity of the object or indeed to prevent handling of the object. Further more cleaning of the object has confirmed that there is no currently active corrosion present, though instead of a continuous malachite layer being present across the objects surface there are areas where the malachite is discontinuous and the brownish red corrosion product cuprite is clearly visible. Overall the object is in a relatively robust condition with no further remedial conservation requirements at this point in time.

Scott, D. 2002. Copper and Bronze in Art: Corrosion, Colorants and Conservation. Getty Conservation Institute. Los Angeles.

Significance -

The currently unidentified object was recovered during field survey and excavations conducted by Cambridge University's faculty of classics at Thwing, East Yorkshire, more specifically the object was recovered from the final magnetometer square 2004 (Ferraby et al. 2006). The site as a whole was initially identified after the discovery of a concentration of roman pottery was recovered after ploughing. Small exploratory excavations and a geophysical survey were conducted during 2004-2005, which revealed the presence of a pre-historic ladder settlement and a well-preserved stone structure. A further four weeks of excavation were conducted in 2005 concentrating upon the stone structure, in addition to which a more extensive magnetometer survey of the ladder settlement was undertaken.

The results of the fieldwork and excavations conducted to date suggest that site is of considerable significance as firstly the ladder settlement shows distinct areas of use across a range of periods, for example one area comprises a series of round houses believed to be Iron Age in date, another enclosure shows less intense activity perhaps used for farming or cultivation, with the final distinct enclosure containing the stone structure excavated and demonstrating evidence of extensive roman activity with a possible Iron Age precursor. The high quality of the geophysical results obtained from the survey allows conclusions to be drawn regarding the development of farming practices and land use in the immediate vicinity of the excavated stone structure. Secondly the stone structure is significant in its own right as it is extremely well preserved, with walls and indeed a considerable amount of decorated wall plaster found in situ, further more within the south pavilion contained well preserved midden deposits including animal bones, oyster and welk shells, fish bones, and a variety of seeds belonging to cereal crops as well as pottery suggesting a third or fourth century date. Thus the quality of the excavated material has the potential to allow archaeologists to develop a clear understanding of the use of the rooms and also of rubbish disposal patterns within the structure.

Given that the object in question has not be positively identified expect to suggest that the object may be a terminal of some kind means that it is very hard to gauge the significance of the object outside that of having been recovered from a site of archaeological significance. However given that the object has been recovered and sent for conservation the object clearly hold some significance for the archaeologist even if only aesthetic or even curiosity value.

References:

Ferraby, R et al. 2006. Fieldwork and Excavations near Thwing, East Yorks 2006. Cambridge University Faculty of Classics.

Examination -

The object was examined using of low power binocular microscope and x-radiography. X-rays of the object revealed it to be in relatively robust condition with only a thin layer of corrosion products present. Though also present was a clear crack running through the thin end of the object, though this said the crack did not appear to compromise the structural integrity of the object.

Tests / analysis -

A small test area of the objects surface was test cleaned using IMS (Industrial Methylated Spirits) and a scalpel, confirming that the soil visible upon the surface was relatively loosely adhered to the objects surface and could be removed with relative ease.

Justification for Treatment -

In response to email communications with professor Martin Millet regarding conservation and future use, it was clear that conservation work was to be undertaken prior to the objects handling and study for publication. After which time the object will be placed in museum storage at a museum local to Thwing, most probably at Hull. However there were not plans for long term display of any kind, though some form of temporary display was a possibility in order to show the general public the results of the excavations. The objects recovered during excavation will only receive limited handling, for example during study. As such Professor Millet had no direct requests regarding the exact extent of conservation to take place.

Cleaning -

The soil adhering to the surface of the object was removed using the application of swabs of IMS and a scalpel, particularly around the incised bands of decoration where swabs were insufficient to effectively remove the soil from the object. Though as the soil was relatively limited in its extent very little cleaning was actually required.

Stabilisation -

Given the relatively robust nature of the object and the absence of active corrosion, it was felt that no stabilisation was deemed necessary.

Reconstruction / repair -

Despite the presence of a crack at the thinner end of the object no reconstruction or repair was deemed necessary in this particular case, given that the crack does not threaten the structural stability of the object nor does it in any way limit the handling of the object. Particularly as the object is unlikely to be extensively handled given its limited archaeological significance.

Loss compensation -

Given the condition of the object no loss compensation was required as part of the object treatment.

Other -

Finally as the object was likely to be handled, even though only in a limited manner given the lack of a secure archaeological context or a positive identification, several coats of Paraloid B48N (acrylate co-polymer) 5% in Xylene were applied to object to prevent further corrosion occurring and to provide some protection for the surface of the object during handling. Paraloid B48N was chosen to coat the object as it lacks the health and safety concerns associated with the use of and indeed the handling of object coated in BTA (Benzotriazole), an alternative option with regard to coating to object, whilst providing an effective corrosion inhibitor and barrier layer.

Student evaluation of treatment -

The treatment appears to have been successful as all of the overlying soil has been removed confirming that there is no currently active corrosion present and that the crack identified during the course of initial examinations was of limited concern, with no visible damage to the surface of the object. The coatings of 5% Paraloid B48N appears to have been relatively successful as the surface of the object has been protected with minimal alterations to the objects colour and texture. Overall the requirements of the owner have been met by the treatment.

Packaging -

The object has been packaged using a crystal box lined with layers of plastazote foam into which the object has been recessed and an overlaying layer of acid free tissue paper. Additionally silica gel and a humidity strip has been placed within the crystal box and underneath the plastazote layer in order to maintain a consistent relative humidity within the packaging in order to help prevent any future corrosion occurring. Furthermore labels including an image of the object, object information and suggested handling have been affixed to the crystal box for ease of identification and to prevent necessary handling.

Recommendations for Further Care -

The object should be kept in relatively stable environmental conditions, at a temperature of approximately 20°C and a Relative Humidity of below 55% RH, though avoiding large or regular fluctuations is perhaps more important than keeping very tight environmental controls. The object should continue to be stored in appropriate archival quality packaging, and kept dust free. When handled gloves should be worn.

Photography / other illustrations <i>Colour slide/digital/ print</i> Digital images of the object, before and after treatment attached. As are slide image of the object before and after treatment.	Other documentation (analytical, portfolio report, etc) X-rays of the object are attached.
Signature of student <i>N. Mildwaters</i>	Date <i>23rd March 2007</i>
Signature of practical tutor	Date

Lab Number: 8141
Cu Alloy Object
Before Treatment

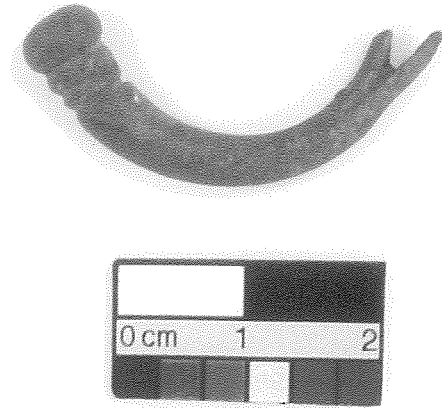


Figure 1. Photograph showing view A of the object before treatment.

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Cu Alloy Object
Before Treatment



Figure 2. Photograph showing view B of the object before treatment.

Lab Number: 8141
Cu Alloy Object
After Treatment

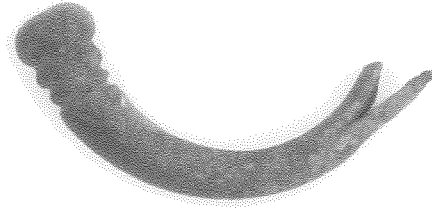


Figure 3. Photograph showing view A of the object after treatment.

Lab Number: 8141
Cu Alloy Object
After Treatment

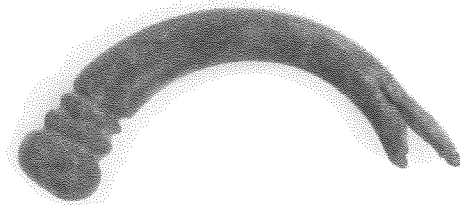


Figure 4. Photograph showing view B of the object after treatment.