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Sandstone crucibles from Mhlopeni, KwaZulu-Natal: evidence of precolonial brassworking

by

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ABSTRACT

Several stone crucibles were recovered from an eroded area at Mhlopeni Nature Reserve near Muden, KwaZulu-Natal. Most were from the filling of a grain storage pit dating to the 17th century. The crucibles were studied to determine their function and possible technological and social significance. Glass samples removed from encrustations on these crucibles contained significant concentrations of zinc, thus confirming that they were used in brass processing. They formed part of the equipment of a local smith, engaged in remelting and casting imported brass, and possibly were buried deliberately on his death.

INTRODUCTION

The Mhlopeni Nature Reserve near Muden, KwaZulu-Natal, is already known for its Early Iron Age (EIA) sites (Maggs & Ward 1984). This paper returns to examine two occurrences from a later period which indicate that brassworking took place in the vicinity prior to colonisation in the nineteenth century.

The source of the copper and brass in the Iron Age is of interest because the KwaZulu-Natal region has no significant outcrops of copper ore. There are a few small, low-grade occurrences and it is possible that some precolonial copper mining and smelting took place at these localities, but as yet there is no archaeological or historical evidence to confirm this. At the current stage of our knowledge we are therefore working under the assumption that the great majority, if not all the copper, had to be imported into the region.

As to the other component of brass, namely zinc, there is no evidence of its extraction in precolonial southern Africa. The complex technology required for zinc smelting was unknown in the relatively unspecialised economy of the African Iron Age (Roodt 1993).

The copper and brass used in KwaZulu-Natal would therefore have been imported. Some copper, especially in the earlier centuries would have been traded overland from regions north of the Vaal and Phongolo rivers, but the source of brass was beyond the African continent. Brass became a significant import and a prestige commodity among the northern Nguni-speaking peoples from the sixteenth through to the nineteenth centuries. From early in the Portuguese mercantilist period, copper and more especially brass, was in demand and was traded to these communities through Delagoa Bay. Other European traders followed suit while possible new ports were explored; both St Lucia and the Bay of Natal (Durban) are mentioned in connection with this trade during the seventeenth century (Theal 1907), in addition to Delagoa Bay.

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Historians have shown that trade between local communities and European merchants was a significant factor if not the main cause in the rise of larger scale kingdoms among the northern Nguni in the eighteenth and early nineteenth centuries (e.g. Hedges 1978, Smith 1969). Brass featured as one of the important imports in this exchange system.

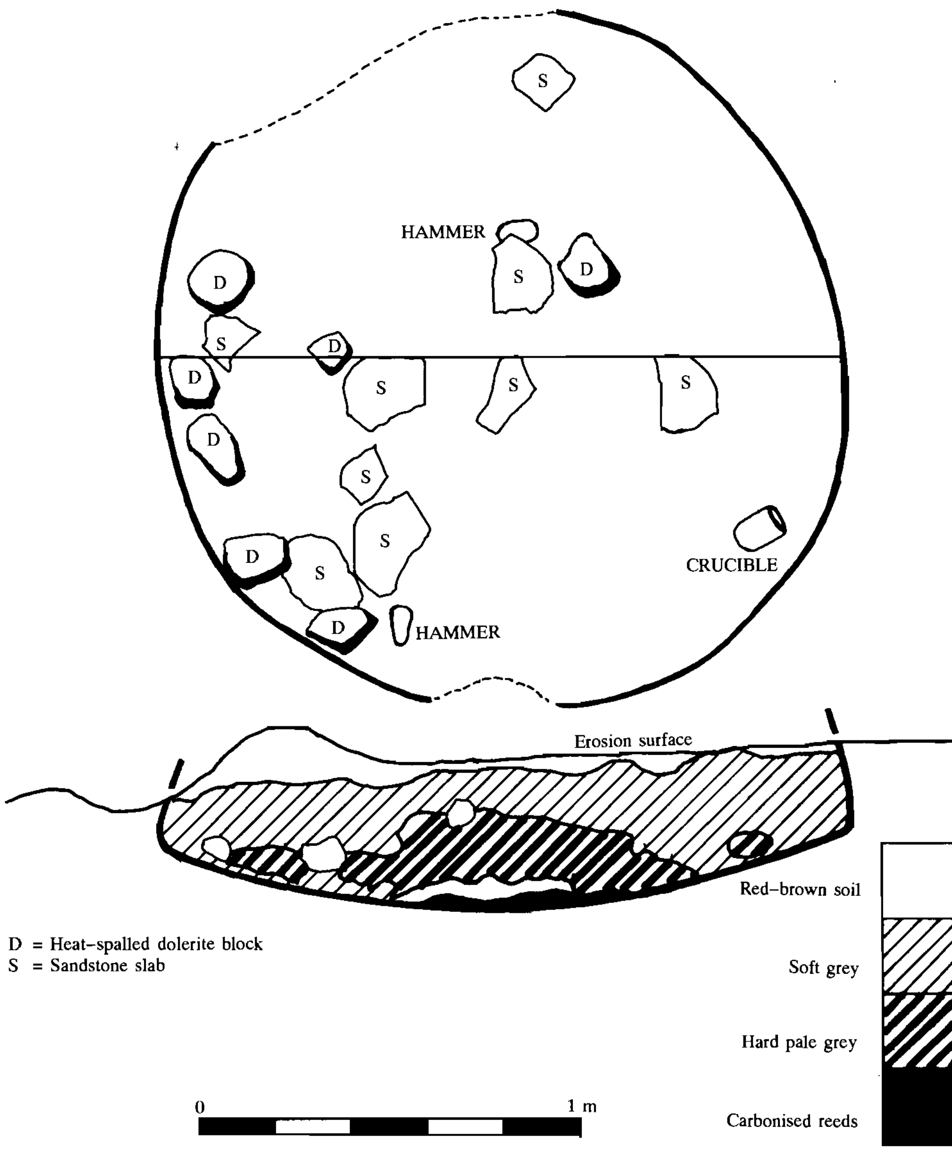

Fig. 1. Plan and section of Feature 1, a grain storage pit.

The imported metal was transformed by local smiths into a variety of artefacts. The processing and the finished items have both been the subject of recent research

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(Kennedy 1991, Roodt 1993). Roodt's work is the first to examine the archaeological evidence from a site where brassworking was actually carried out, namely at the Zulu royal capital of Mgungundlovu (1829–1838). The project goes a long way towards describing the processes and technology used by nineteenth century smiths to convert imported brass into high status ornaments for the court of the Zulu king, Dingane.

At Mgungundlovu, sandstone crucibles were used to melt brass which was then poured into a variety of moulds. Although Roodt excavated as much as 63 kg of broken crucible pieces, none was complete and he was able to do little in the way of reconstruction because of fragmentation and scattering.

Recently L. van Schalkwyk (*pers. comm.*) excavated a fragmentary sandstone crucible in a midden at Bulawayo (c. 1820), an early capital of King Shaka, near Eshowe, KwaZulu-Natal. The midden, in the upper portion of the site, also contained three iron spearheads, a brass *indondo* (large spherical bead) and glass beads.

To our knowledge Mhlopeni is the only other site in the KwaZulu-Natal region with a record of sandstone crucibles, although they are also known from other parts of southern Africa (Maggs 1976). The first Mhlopeni examples were surface finds by R. Alcock in 1986. He noticed a complete crucible (Fig. 7,2) protruding from a patch of grey soil (our feature 1) in an area of deeply eroded red soil. Lower in the same eroded area was a second grey patch (our feature 2). A few metres down slope from here he found three fitting pieces from another crucible (Fig. 7,1). He reported these finds to the Natal Museum which led to our excavation of the two features.

THE SITE

Both of the crucible-bearing features occur in a deeply eroded area, several hectares in extent. The erosion coincides broadly with an extensive Early Iron Age site (2930AB 6) on the southern boundary of the Mhlopeni Nature Reserve and on the southern side of the Mhlopeni River nearly 2 km south of the excavated EIA site (Natal Museum records, Maggs & Ward 1984 Fig. 1). There is therefore a general scatter of EIA material, including the distinctive pottery, ironsmelting slag and the thin-walled tuyères (Maggs 1982) and the grindstones characteristic of this period, in the eroded area including the vicinity of the two crucible features. We found also a scatter of Late Iron Age (LIA) material – pottery, grindstones and the characteristic thick-walled tuyères – in the vicinity of the crucible features, but the deep erosion makes it impossible to associate any of these with the crucibles for certain.

Feature 1

The grey patch of Feature 1 proved to be the filling of a well-defined pit dug into the red soil. Erosion has truncated the pit removing all but the bottom 40 cm of deposit (Fig. 1). This consisted of a surface layer of soft, red-brown soil overlying 30 cm of predominantly grey material which included areas of hard, pale-grey clods with the appearance of cattle dung. Towards the centre was a lens of red soil over a thin layer of carbonised plant material which had been burnt *in situ* on the floor of the pit. This has been identified by Prof. E. Hennessey as the stems, leaves and roots of *Phragmites australis*, the common reed. The floor itself was neatly dished and had been finished by ramming and perhaps polishing the surface of the red soil so that it remains far harder than the soil elsewhere.

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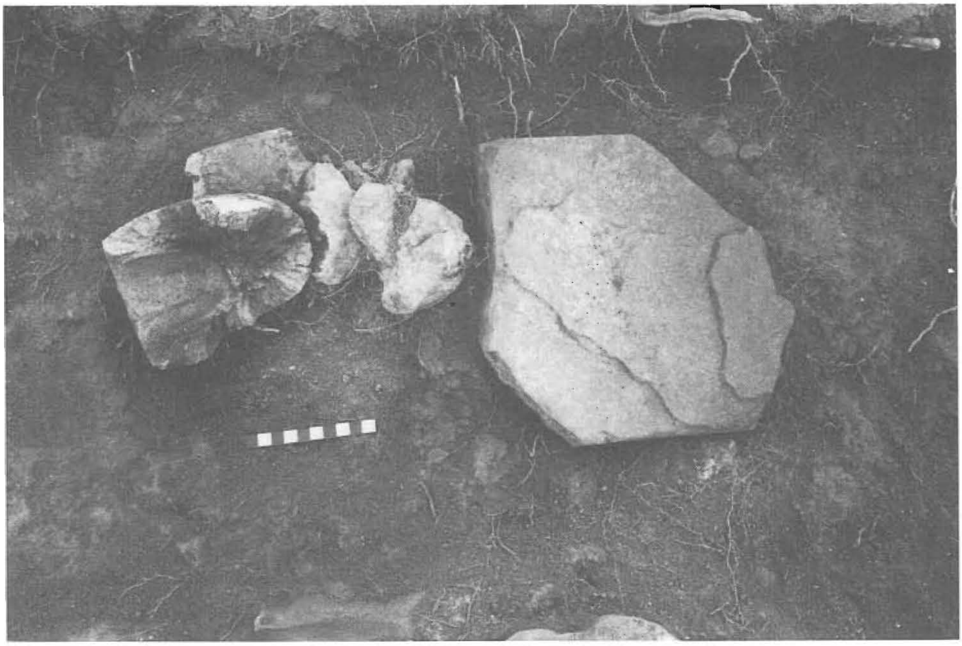

Fig. 2. Crucible fragments *in situ* in upper part of the remnant deposit of Feature 1.

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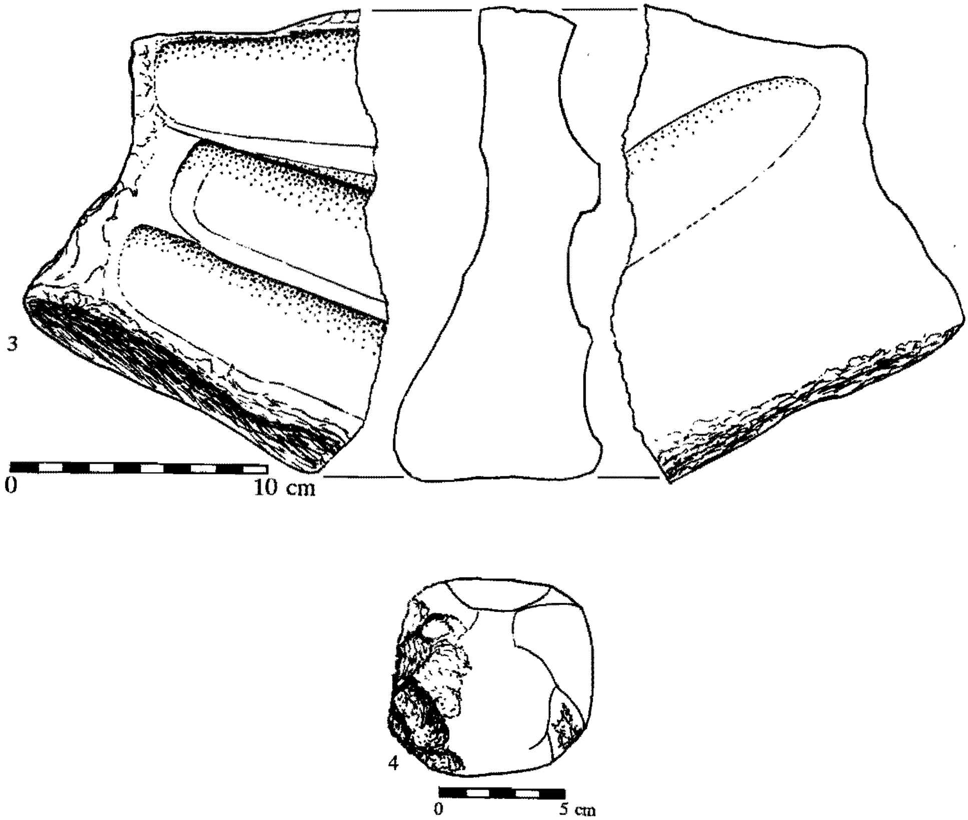
Three crucibles, including the initial surface find, were from the central part of the feature and near the eroded surface (Fig. 2). A fourth one (Fig. 7,3) was somewhat deeper, 10 cm above the base of the pit and on the southern side (Fig. 1). Only the initial find was complete, the others being sufficiently preserved to allow for reconstruction (Fig. 7).

In the lower portion of the feature, 8–15 cm above the floor, and especially on the northern side were a number of stones (Fig. 1). They are of interest in that they had been deliberately selected and utilised prior to disposal in the pit. The sandstone pieces are flat slabs of a laminar form which outcrops some distance from the site and therefore they have been brought in at some effort. Some have slightly smoothed high spots but they are not extensively modified so their function is not evident. A piece of more massive sandstone from the upper part of the fill has been much modified from use as a grindstone and subsequently for grinding/sharpening metal objects (Fig. 3). The other stones are of local dolerite. Two are cobbles which have been used as hammers, as has an Early Iron Age grindstone which was probably picked up in the vicinity and utilised during the later occupation (Fig. 4). The other dolerite pieces all show heat spalling so they were probably used either in domestic hearths or in the metalworking process.

There was little other cultural material in the deposit. The small collection of sherds included four rims, one burnished with red ochre and one decorated with notching on the rim (Fig. 5). Both characteristics are typical of the local Late Iron Age but are not tightly time-specific. A flat pebble with abraded surfaces may have been used to burnish pottery. R. Alcock recovered sherds from a small bowl 10



Figs 3 & 4. Grindstones (Feature 1). 3. Lower grindstone fragment used as abrasive in metalworking. 4. Early Iron Age type of upper grindstone used as a hammer.

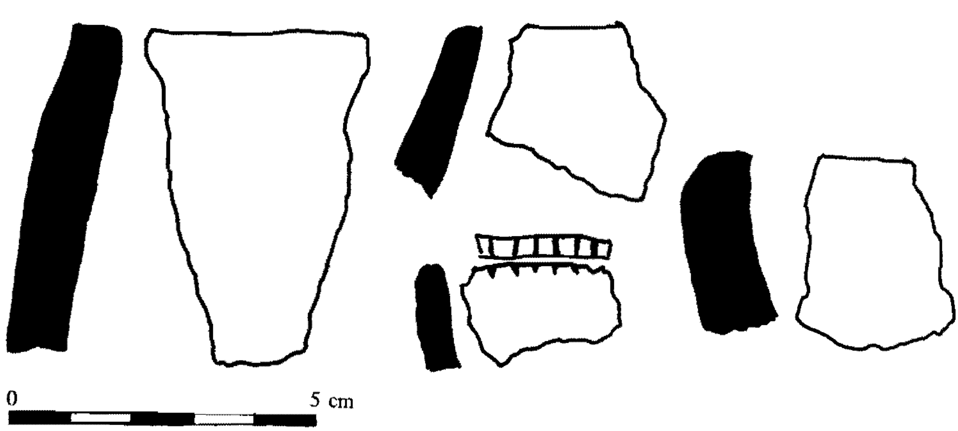


Fig. 5. Rim sherds of Late Iron Age type from Feature 1.

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metres down hill from Feature 1, which may be from the same occupation. The row of triangular impressions on the rim would likewise suggest a Late Iron Age date (Fig. 6). Some bone was recovered, most of it finely comminuted and some of it burnt. There were several fragments from the skull of a large mammal, probably cattle.

A sample of charcoal, collected at a depth of between 5 and 20 cm gave a reading of 290 ± 70 (AD 1660, Pta-5480). The most likely calibrated date would be AD 1651 (J. Vogel *pers. comm.*).

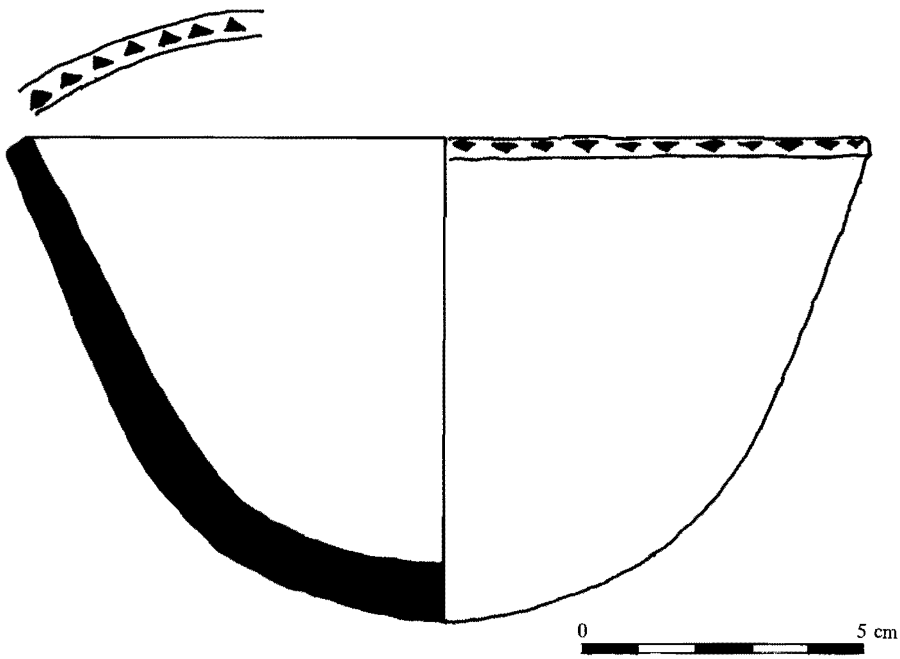

Fig. 6. Decorated bowl from erosion surface about 10 metres downhill from Feature 1.

Feature 2

The second grey patch was 115 metres ESE of Feature 1, close to the boundary of the Mhlopeni Nature Reserve. It was one metre in maximum diameter and, on excavation, proved to be only 10 cm deep. The deposit again consisted of the grey clods, apparently of old cattle dung, resting on an unmodified, flat solid surface. This surface would seem to have been about 0.4 m below the original ground level to judge by neighbouring uneroded high points. This would again indicate a pit, though in this case much shallower and lacking a prepared floor.

The three fitting pieces of crucible (Fig. 7,1) were found by R. Alcock three to four metres downhill in an erosion gully. No further pieces were recovered in the excavation which yielded only a few featureless sherds and scraps of bone. Several dolerite blocks on the surface included a split cobble with a few flakes removed and a large upper grindstone with peck marks, of the kind normally associated with maize cultivation. Feature 2 is of little interest compared with Feature 1.

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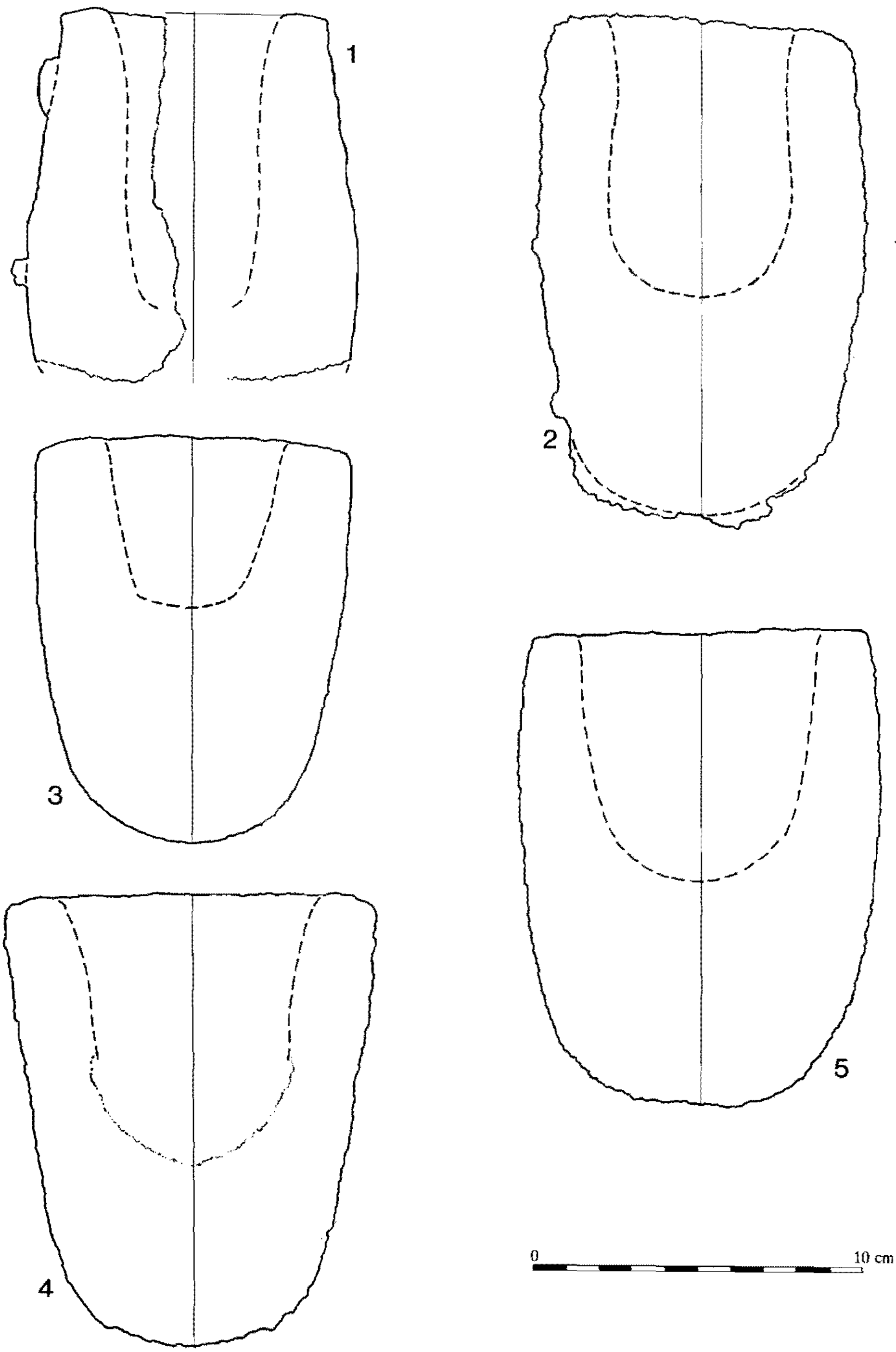

Fig. 7. The sandstone crucibles: 1. Erosion gulley below Feature 2. 2. Feature 1 surface. 3–5. Grey deposit in Feature 1.

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ANALYTICAL METHODS

Two of the sandstone crucibles from Mhlopeni, one each from Features 1 and 2 (Fig. 7,1 & 2) were submitted to the Archaeology Materials Laboratory at the University of Cape Town for analysis. The aim of the analysis was to determine whether either or both of the crucibles had been involved in the melting and processing of brass. The sampling strategy was to remove small pieces of the glass coating from the outsides of both crucibles for energy dispersive X-ray fluorescence analysis (EDS) in the scanning electron microscope. Samples were taken from the rims of both crucibles and from the flank and near the base of the unbroken sample.

Both specimens were photographed, weighed, sketched, measured and their visual appearance described. Samples of the adhering glass were removed with a small chisel. One substantial nodule of glass was embedded in cold-setting acrylic resin under vacuum, and ground and polished on rotary laps, with a final, $\frac{1}{4}$ micron diamond polish for optical examination. The others were washed in ethanol and acetone, dried, and mounted on aluminium SEM stubs, with the outer glassy surfaces exposed for analysis. The polished section was studied with a Reichert-Jung Polyvar dual metallographic/petrographic microscope, using plane polarised and cross polarised light.

The chemical analyses were carried out in the Electron Microscope Unit, UCT, using a Cambridge S200 scanning electron microscope with a Kevex energy dispersive X-ray fluorescence micro-analysis system. Analyses were done in raster mode for the determination of bulk compositions and in spot mode, with an analytical volume of about 1 micron diameter, for the determination of composition in selected locations. Software ZAF corrections were applied to the analytical results to produce semi-quantitative analyses expressed as simple oxide percent (oxygen determined by stoichiometry) normalised automatically to 100 percent. This system has a precision of about 1 percent for the detectable elements, in this case those with atomic weights heavier than sodium. The lower limit of detection is about 0.1 percent under optimal conditions. Values below 1 percent represent only presence or absence information.

DESCRIPTIONS OF ANALYTICAL RESULTS

The petrographic description is presented below and the results of the EDS analyses are listed in Table 1.

The Feature 2 crucible

This was the reconstructed fragment of a sandstone crucible comprising three separate pieces which had been glued together (Fig. 8). Two pieces preserved part of the original rim, the other being part of the bottom of the interior (Fig. 9). The wall thickness was about 12 mm at the rim and about 30 mm at the base of the original internal depression. The overall height of the reassembled fragment was 110 mm and the width 80 mm. The total mass was 331.9 g.

The outside was coated with a yellowish green glass, incorporating frothy lumps. The glaze appeared to have run down the outside from near the rim. The interior was stained a reddish brown but otherwise had no visible deposits. The material of the

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TABLE 1

Results of the energy dispersive X-ray fluorescence analyses of glass from Mhlopeni crucibles.
(r = raster, s = spot).

Sample	(mode)	Oxides Wt. % Na_2O	MgO	Al_2O3	SiO_2	P_2O_5	SO_3	Cl	K_2O	CaO	TiO_2	MnO	FeO	CuO	ZnO	BaO
Feature 2 a	(s)	–	2.0	3.4	57.4	–	–	–	8.2	8.5	1.5	0.5	13.4	0.4	4.7	–
Feature 2 b	(s)	–	1.1	6.8	47.9	–	–	–	9.1	10.1	1.9	0.6	15.7	0.9	3.3	2.6
Feature 2 c	(s)	–	0.2	8.7	67.6	–	–	–	10.4	4.0	1.7	0.4	7.1	–	–	–
Feature 2 d	(s)	–	0.9	9.7	56.0	–	–	–	10.4	8.4	1.8	0.4	11.8	0.6	–	–
Feature 2 e	(s)	–	2.1	12.2	57.6	0.4	2.1	0.4	4.4	8.4	1.2	–	11.3	–	–	–
Feature 2 f	(r)	–	2.4	11.4	57.0	0.3	3.7	0.4	4.0	7.0	1.1	–	12.7	–	–	–
Feature 1 a	(r)	–	8.3	17.8	57.7	–	1.5	–	3.6	3.1	–	0.3	7.8	–	–	–
Feature 1 b	(r)	–	7.5	16.8	57.0	–	2.3	–	3.8	5.5	–	–	7.1	–	–	–
Feature 1 c	(s)	–	8.1	19.0	60.0	–	–	–	3.0	–	–	1.3	8.5	–	–	–
Feature 1 d	(s)	–	7.3	15.7	54.7	–	1.5	–	3.4	11.0	–	–	6.5	–	–	–
Feature 1 e	(s)	–	8.4	17.7	59.1	–	1.2	–	3.7	2.6	–	–	7.4	–	–	–
Feature 1 f	(r)	–	6.6	3.6	68.1	–	1.0	–	3.5	13.6	–	–	3.7	–	–	–
Feature 1 g	(s)	–	3.6	6.5	57.7	–	0.3	–	12.4	12.4	–	–	7.2	–	–	–
Feature 1 h	(s)	–	–	2.4	71.2	–	–	–	1.7	7.8	2.4	0.3	13.4	0.7	–	–
Feature 1 i	(r)	–	1.7	2.8	59.3	5.6	–	–	7.7	16.4	1.0	–	5.7	–	–	–
Feature 1 j	(r)	–	3.1	5.4	64.1	–	2.2	0.4	8.9	7.8	1.0	1.0	6.1	–	–	–
Feature 1 k	(r)	1.9	3.2	4.6	52.4	0.3	0.9	0.2	4.6	12.0	0.7	0.6	5.0	8.8	5.0	–
Feature 1 l	(r)	–	1.5	9.1	47.7	1.2	2.1	0.1	4.5	12.8	2.5	1.5	11.9	–	5.2	–
Feature 1 m	(r)	–	3.0	4.8	53.5	0.3	–	–	6.2	17.1	0.5	0.6	2.1	12.0	–	–
Feature 1 n	(r)	–	2.4	5.4	60.5	–	–	–	8.1	8.6	–	–	1.3	13.8	–	–
Feature 1 o	(r)	–	5.3	4.2	52.8	0.4	–	–	5.3	25.5	–	–	2.7	4.0	–	–
Feature 1 p	(s)	–	–	1.6	15.1	–	–	–	2.0	1.8	–	–	0.4	79.2	–	–

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crucible was a coarse sandstone which was not particularly well cemented. There were no internal grooves or any other signs of manufacturing technique.

Two small glass samples were removed from near the rim for EDS analysis (Table 1: Feature 2 a–f). Six analyses of the glass surfaces indicated an alumino-silicate glass, containing mainly SiO_2 with about 10 % each of Al_2O_3, K_2O, CaO and FeO. The glass composition varied between the two specimens, with one area containing a minor amount of MnO and another some P_2O_5, SO_3, and Cl. One of the two specimens contained detectable CuO in three spot analyses and 3.3 % and 4.7 % ZnO in two analyses.

Figs 8–10. Photographs of crucibles (scales in cm). 8. Outside of the reconstructed fragments (Feature 2). 9. Inside of the reconstructed crucible (Feature 2). 10. Whole crucible (Feature 1).

The Feature 1 crucible

This artefact was an entire sandstone crucible with an ovoid shape (Fig. 10). There was a crack down one side internally that did not reach the surface. The overall diameter was 90–100 mm, the length about 150 mm and the maximum internal diameter about 55 mm, the rim was about 15–20 mm thick and the hole about 80 mm deep. The mass was 1482.6 g.

The outside was coated with a brightly coloured glass, ranging from greenish yellow, through brick red, to black. This glaze had run down the outside in streaks, to form frothy globules around the base. There was no deposit in the interior except a few patches near the rim, about 1 mm in diameter, stained bright green with malachite. The sandstone in the interior had been eroded to expose fresh white granular material at the bottom of the hole. The outside base was covered by warty lumps of glass except where a portion appeared to have been broken off, exposing the sandstone beneath.

One nodule near the rim was removed and sectioned. It consisted of a porous sandy glass with partly crystalline areas crowded with feathery dendrites (Figs 11 & 12). The glass on the outside edge contained tiny red spherules set in a clear glass matrix. In section, these were metallic. The glass at the inner edge had devitrified and

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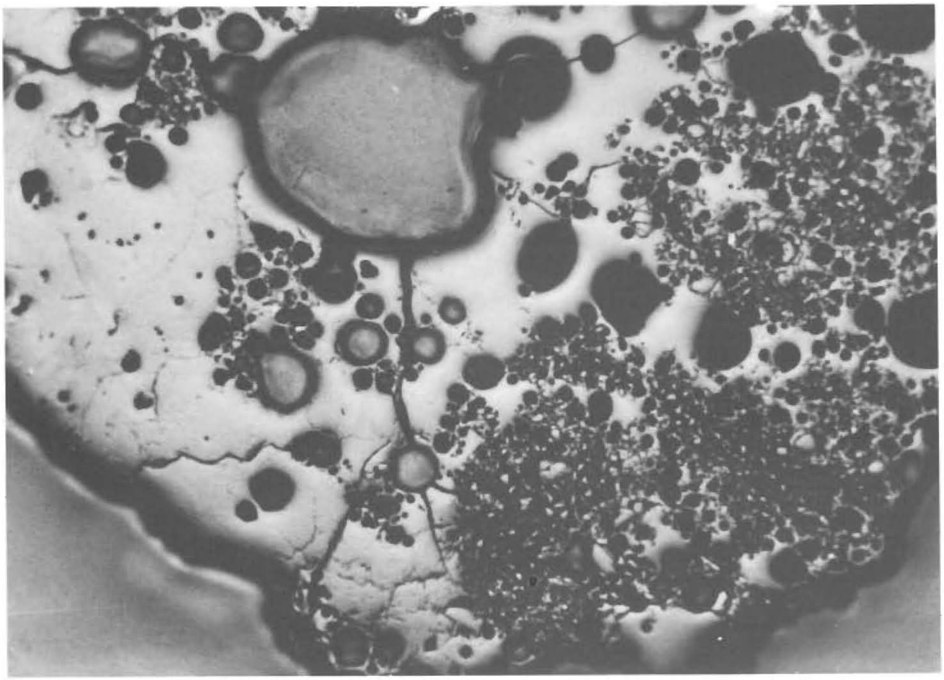

Fig. 11. Micrograph of a polished section through a glassy nodule showing gas bubbles and included quartz sand grains (14.5X).

Fig. 12. Micrograph of section through glass nodule showing a gas bubble and feathery crystalline dendrite (112X).

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crystallised. The glassy matrix throughout was dark brown. The included sand grains consisted of angular quartz, probably derived from the sandstone.

EDS raster and spot analyses were carried out on the glassy outer surfaces of five different fragments (Table 1: Feature 1 a–l). The first three were from nodules removed from the base of the crucibles. These showed some variation in composition, especially in the percentage Al_2O_3, because of the general inhomogeneity of the glass and its inclusions (Table 1: Feature 1 a–j). Two different samples removed from the rim of the crucible were far more interesting, with a much wider range of elements represented (Table 1: Feature 1 k, l). The analysis of one of them contained 8.8 % CuO and both contained about 5 % ZnO.

The EDS analysis of the polished section of the nodule removed from near, but slightly below the rim, showed significant levels of CuO but no ZnO (Table 1: Feature 1 m–o). A spot analysis of one of the spherical globules just below the outer surface of the glaze indicated 79 % CuO and only a trace of iron (Table 1: Feature 1 p). The additional elements detected in this spot analysis were probably derived from the surrounding matrix. In reality this inclusion formed part of a swarm of tiny metallic copper globules, with a maximum diameter of 10 microns. Most were very much smaller.

DISCUSSION AND CONCLUDING REMARKS

The glassy coating of both these crucibles was an accidental glaze formed during the processing of a zinc/copper alloy like brass. The presence of zinc was detected only in specimens removed from the rims of both crucibles. This is not surprising because zinc is a very volatile metal. Pure zinc has a boiling point of 907 °C (Tylecote 1992: 152), which is below the melting point of alpha brass alloys of copper with up to about 30 % zinc (Scott 1991: 131). There is no way of determining the original percentage zinc in the alloy melted in the crucibles analysed, but some zinc must have vaporised in the melting process and been trapped in the molten glass on the rim.

It is also not possible to estimate the glass formation temperature from the available analytical data. But the presence of metallic copper inclusions in the surface layer of the glass itself indicates that at least the surface in places must have reached the melting point of copper, about 1085 °C (Scott 1991: 131). This was probably achieved in a bellows-blown charcoal fire which would account for the slagging effect of the outer walls of the sandstone crucibles. The presence of significant quantities of K_2O and CaO derived from wood ash would have acted as a flux on the exposed silica surface of the crucibles, and lowered the melting temperature to form a silica-based glass. Pure silica has a melting temperature of 1723 °C. The glass transformation temperature (below which the glass behaves as a brittle solid) for most silica-based glasses, is between about 500 °C and 700 °C (Babcock 1977: 57). In practice, the temperature on the outside of the crucible must have been somewhat higher than the melting point of the alloy, but this could have ranged from 1085 °C to about 875 °C with corresponding zinc compositions from 0 % zinc to 50 % zinc (Scott 1991: 131). Alloys with more than 50 % zinc have lower melting points, but they are very brittle and generally are avoided (Scott

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1991: 20). We have no direct information on the precise composition of the brass melted in these crucibles, and this discussion is simply to place boundaries on the possible temperature attained by them.

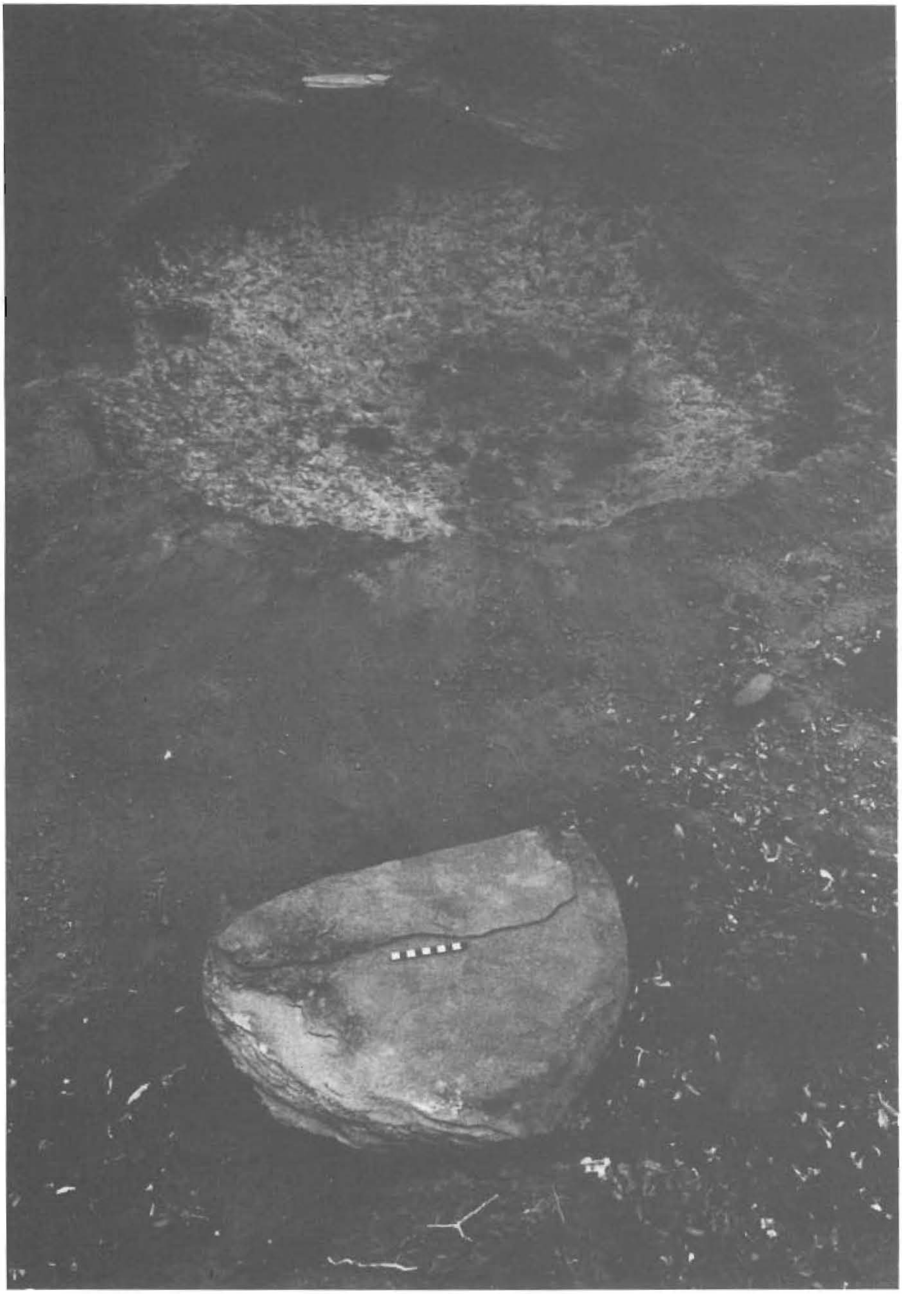

Fig. 13. Feature 1 after excavation. Sandstone slab in foreground was probably used as a lid to close mouth of grain pit.

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We also have no evidence of brass manufacture in southern Africa, either by the addition of calcined smithsonite or of metallic zinc to granulated copper. It is possible that trade brass was added to molten indigenously produced copper, which could account for the zinc-free copper droplets in the glassy slag (M. Grant *pers. comm.*) but zinc is very volatile in molten copper and could have vaporised from the tiny copper droplets. This may also account for the negligible zinc values in the indigenously produced copper artefacts analysed to date. Given the historical accounts of brassworking in Natal (Roodt 1993) we believe that these crucibles were used in remelting imported brass. The interiors were remarkably clean and devoid of any metallic deposits or the fayalitic slag usually associated with copper smelting rather than melting. This indicates that clean metal with a substantial zinc content was heated considerably above its melting point, and then cleanly cast in a single decantation. This in turn implies the use of heat resistant tongs of some sort (possibly iron tongs or green poles), and perhaps a mould. Direct evidence of secondary metals processing is rare in the southern African Iron Age record and this makes these crucibles and their context of particular interest.

Feature 1 has all the appearance of a grain storage pit as used by many Nguni-speaking communities before the twentieth century (Parkington & Cronin 1979, Shaw & Van Warmelo 1972). Sufficient remains of the sides to show that it was widest at the base (Fig. 1) and would have tapered to a relatively small opening. High points of less eroded land in the vicinity suggest that it was less than 1.5 m in total depth when complete. By contrast with Early Iron Age pits, Nguni grain pits were typically 'bell-shaped' and were closed with a flat slab of stone. Just such a stone lies on the surface beside the pit (Fig. 13). It is 56 cm long yet only 6 cm thick and is of the tabular sandstone which seems to have been brought from as far as a kilometre away. It suggests that the entrance to the pit was a little less than 0.5 m in diameter, a figure which again corresponds to that of Nguni grain pits.

From the available information we can go some way towards reconstructing events in the life of the pit. After it had been completed and the surface compacted and polished, a small fire was evidently set to dry and sterilise the pit before it was used for storage. The carbonised reed material on the floor was presumably collected specially for this purpose. The small lens of red soil overlying the burnt part seems to be surface soil which found its way through the open entrance. The presence of the cattle dung and stones is more difficult to explain. Nguni grain pits were normally placed within the cattle pen in the centre of the homestead, so it is most likely that Feature 1 was similarly placed in a central pen. However, it would have been dangerous to leave a pit open while cattle were being penned there. A pit might well have a lining of dung (Shaw & Van Warmelo 1972) but in the present case, with more than 30 cm thickness, this is clearly not a lining. Mixed up with the dung, the stones, which were evidently part of the homestead equipment or fabric, must have been deliberately dumped in the pit, most if not all at one episode. The presence of the dung and stones signals that the pit was no longer intended for grain storage at the time of their disposal. These materials therefore seem to have been used, along with soil, to fill in the pit.

There are at least two possible reasons for the abandonment of a pit: failure of the storage function or abandonment of the whole homestead. Storage may fail through

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biotic infestation, for example by insects or fungus, or by damage from flooding. Normally the homestead would be abandoned on the death of the *umnumzana* (head of household). In this event his sons would tend to set up their own homesteads in the neighbourhood. The old site, especially the cattle pen, would then be highly desired as a plot for cultivation (Preston-Whyte & Sibisi 1975), a consideration which could lead to the filling in of a grain pit. Also relevant to this discussion is the question of why the crucibles, including complete ones, were dumped in the pit. Smiths and some materials associated with their work were considered to be a danger to normal people in precolonial Nguni society (Berglund 1976, Maggs 1992). It is likely that crucibles, as in the case at Mhlopeni, and likewise the mould for brass ornaments that was found in the grain pit at Mgungundlovu (Parkington & Cronin 1979), would have fallen into this category. Disposal in a pit that was being filled in would have been a safe solution in such cases. The fact that the complete, and therefore still usable, crucible was also discarded would suggest that the homestead was being abandoned. Here again the death of the homestead head, who would in all likelihood have been the smith as well, is a possible explanation.

From what is known about precolonial Zulu society a brass smith would have been an individual of considerable status although he would have been relatively isolated from normal society and closely affiliated to a powerful *iNkosi* (lord)(Maggs 1992). As in the case of the Zulu kingdom, finished brass ornaments would probably have been distributed by the *iNkosi* to confer and reinforce status within the community (Kennedy 1991, Roodt 1993).

In the absence of any moulds or pieces of brass from Mhlopeni we are unable to establish what items the smith produced. One possibility however, is the *indondo* (large spherical bead), typically about 2 cm in diameter. These were given by Zulu kings to women of the royal household (Kennedy 1991) while they also held connotations beyond that of prestige ornament. They may have been attached to the *isigcayi* (pregnancy apron) and, if worn by a woman, they were believed to save her husband from wounds during warfare (Apostole Mzila *pers. comm.*). Several families in the Muden area, one indeed from the Mhlopeni valley, have had such brass beads in their possessions for several generations.

Most of our information on the local brass industry is from the nineteenth century but historical sources confirm that imported copper/brass was already in considerable demand during the seventeenth century. For example survivors from the British ship *Good Hope*, wrecked in 1686 at modern Durban, were able to purchase quantities of food and ivory with 'beads and copper (probably brass) rings' (Theal 1907: 294). The local brassworking industry, as known from the nineteenth century, was therefore already established by the seventeenth century. The radiocarbon date for brassworking at Mhlopeni serves as archaeological confirmation of the documentary evidence.

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