TREATMENT RATIONALE
Three subsequent fieldwork seasons from 2004-2006 aimed to record and stabilise the recovered material. Given the limited working seasons of three weeks per year and the large number of objects, different approaches to cleaning were adopted. The situlae were separated according to their manufacture, shape, size and degree of decoration. The most representative examples of each type were prioritised for conservation, to ensure that maximum information was recovered via investigative cleaning and the uncovering of decorative details and hieroglyphs. The degree of cleaning was determined by the use of each object; those registered to the Egyptian Supreme Council for Antiquities were cleaned to display standards, whilst the others were only cleaned enough to reveal decoration details and inscriptions.

Although the conservation strategy incorporated a degree of selectivity, the long-term preservation of all the objects could be ensured with environmentally controlled storage and chemical stabilisation.

THE MATERIAL
Most of the recovered situlae were leaded casts, including two hammered from a copper alloy sheet. Almost all had handles, and a few had spouts, attached chain links or square stands.

The presence of lead was empirically assessed by relative weight measurements after the soil was removed from the objects’ interiors. Plumbtesmo spot-test papers for the determination of metallic lead and lead salts confirmed the presence of substantial quantities of lead in the copper alloy (Odegaard et al 2000:66). Although these tests are affected by the presence of silver, cadmium, bismuth and antimony, elements unlikely to be found in the alloy, the result should still be regarded with caution due to risks of soil contamination. It seems that some of the smaller situlae were not leaded, but this needs further investigation, as no analytical facilities were available.

Some of the situlae were plain, but most carried a variety of decorative patterns. Generally, the degree of decoration increased with size, so that the larger situlae had several registers (bands) of gods and associated figures, with clearly defined details and occasionally additional incised decoration. The base of the decorated vessels was usually in the form of a lotus flower. Incised hieroglyphs, if present, were usually found on the bars between the registers. They did not appear to be linked to object size and were not normally visible before cleaning, nor were other incised decorative details.

Details of surface decoration were obscured by thick, compact layers of soil and powdery light-blue/turquoise corrosion, and totally disfigured by dense, voluminous pustules of hard green corrosion products, most likely copper carbonates. The majority of the situlae had suffered mechanical damage, being cracked or having lost their handles, with only a few retaining

CONSERVATION CHALLENGES
Choices of conservation treatments had to be made on the basis of the sheer number of objects, site limitations and facilities available.

Setting up a working laboratory for 3 weeks required careful planning at an early stage. Although some materials were supplied in the UK, the majority of conservation materials and equipment were transported from the UK. The team was hosted in a study room, with sufficient light and space for their needs.

The use of solvents and other chemicals had health and safety implications for the entire team. To minimise the risk, given the lack of extraction units, use of solvents and chemicals was restricted, with processes such as tar-lancing occurring outside. To reduce exposure to corrosion dust, the study team wore dust masks. Using water in the cleaning of the objects also helped to minimise dust levels.

The corrosion type and volume present made decisions on the degree of cleaning challenging. It was difficult to establish the original surface and familiarisation with the material was vital for evolving the best practical conservation choices during treatment.

CONSERVATION IMPLEMENTATION
Investigative cleaning of the cast objects suggested that the incised details of decoration were often unexpectedly (see Scott, 1994) preserved under the voluminous corrosion (Figure 2). Depending on the nature of the corrosion type, detail was also preserved at the interface of a very thin black corrosion layer and the light-blue corrosion product. It is not possible to suggest a particular corrosion model with out detailed analytical investigation of samples taken from the objects.

Surface deposits and the thick layer of light-blue corrosion (which appeared to be very hygroscopic) were softened by immersing the objects in tap-water, allowing their subsequent removal by slow brushing with soft tooth-brushes. Although mechanical cleaning could have had faster results, it was decided to establish the original surface marker mechanically. Where the decoration details were visible, cleaning stopped at a layer above the original surface marker. In a few cases, localized applications of citric- or formic acid or 2Na-EDTA were used to soften green corrosion layers to facilitate their mechanical removal. Hard green corrosion products were removed using various hand tools and micro-grinders.

All treated situlae were dried, chemically stabilized with benzotriazole alcoholic solution, lacquered, stored in desiccated polyethylene boxes and returned to the authority of the Supreme Council for Antiquities at Saqqara (Gosling, Mantell and Nicholson, 2004).

CONCLUSIONS
Although a degree of selectivity may apply to conservation practices according to the use of objects, it is possible to follow a conservation plan in such field works with successful results. Familiarisation with the material is vital for developing the best practical conservation choices during treatment. The Egypt Exploration Society’s commitment to conservation in Egypt has proved fruitful, and good links have been established with the conservators and inspectors of the Supreme Council for Antiquities.

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