

CONSERVATION WORK, 1999

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After the opening of the funerary chapel of vizier Meref-nebef at the beginning of the campaign, a considerable amelioration of the climate inside it has been observed as compared to the previous year. The degree of humidity was found to be much lower and it became clear that neither continued conservation work nor other circumstances resulting in incremental human presence inside the chapel over the course of the 1998 season have affected in any way the climatic conditions.

This is due to the level of humidity inside the rock, which is still very high in the burial chamber at the bottom of Shaft 1, located in the immediate vicinity of the chapel. The humidity accumulated in the rock will presumably continue to be active, diminishing gradually over the years. The construction of a shelter above the chapel will protect it against rainfall, and should stabilize the climatic conditions inside it.

New cases of salting out processes directly related to the humidity level, as well as rock stratification and capillary size, have been observed, in the form of either white fluff or hard and compact encrustation, on all the walls, particularly their lower section (up to c. 1 m above the floor). The process has brought with it new air pores, as well as the disintegration of mortars and of the painted surface together with a thin surface layer of the rock matrix. Conservation treatment carried out in 1997 and 1998 has reinforced the layer of painting sufficiently for it not to peel away.

The seals, put in 1998 on the ceiling cracks inside the chapel and in front of the facade, have also remained without any observable change.

Conservation work inside the funerary chapel of Meref-nebef focused on re-attachment of new blisters and foliation and on the parts of the walls, like the northern one, that had received less attention in the 1998 campaign. Wherever salt concentrations have led to the detachment of the layer of painting and have disturbed the integrity of the rock matrix (as on the chapel facade), a Paraloid B72 solution in toluene (8%) was used in order to re-attach the affected parts and reinforce the matrix. A 5% water solution of Primal E 330 was used to re-attach detached layers of polychromy, after having first made injections of 95% ethyl alcohol in order to drain the capillaries and to diminish the external tension. This procedure was applied on the false-doors (the northern one), as well as on the southwestern and eastern walls, not to mention the whitewashed lowest wall register all around.

Voids under the layer of polychromy, generated by disintegration of the weakened rocky substance, have been injected with a lute made of Primal E 330 with a filling of calcium carbonate CaCO_3 , fine-grained sand, chalk, and a small quantity of pigment. In some cases (on the facade in particular), Paraloid B 72 in toluene was used instead of Primal E 330.

An attempt was made to consolidate especially disintegrated stone (devoid of

polychromy) with a solution of Paraloid B 72 in toluene. This kind of protection, even if it only reinforces the surface layer, allows further detachment of stone fragments and losses of the rock matrix to be avoided.

The choice of conservation materials and procedures was dependent on a petrographic examination of rock samples from the area of the funerary chapel, made at Warsaw University's Faculty of Geology. Data on the mineral composition of the samples revealed the rock as belonging to the pelitic marly limestone group. The participation of loamy minerals – mostly

calcium smectites – has been determined to vary (19.7-22.1%) in each sample.

The materials used in our conservation work are Remmers products: 1) Funcosil Antihygro, intended for conservation of natural stones with loamy binder, limiting hydration heaving, and 2) Funcosil Steinfestiger 300, a preparation used for reinforcing natural stones with weakened interior structure. A low-pressure spray device and brushes were used. The practical effectiveness of this treatment will be visible only after the process of precipitating the siliceous gel is completed in effect of applying Funcosil Steinfestiger 300.

CONSERVATION OF OBJECTS

The limestone false-door of Peh-en-Ptah (Pehi) (preserved lower part) was found *in situ* in the northern part of Area I. Its surface, bearing traces of red paint, is disintegrating and tends to laminate because of the salts crystallizing on its surface. It has been treated with a solution of Paraloid B 72 in xylene (10%). Bigger detached fragments have been reattached with a lute of chalk and fine-grained sand, based on Paraloid (as above). The interior of the stone is practically wholly disintegrated and has been reinforced.

All the inscribed limestone blocks – the false door of Kheti, priestess of Hathor, found in Shaft 14, as well as a lintel (in two fragments) and a door jamb of Ni-Pepi, found in the rubble below the floor of Chapel 5 – were treated in the same way. Their surface was first cleaned, removing remains of gypsum whitewash, which partly covered the hieroglyphic inscriptions. Tiny traces of the polychromy (red pigment on the figures and green inside the hieroglyphs) were thus uncovered and protected.

Two of the wooden figurines found in Shaft 27 preserve some of the original polychromy, painted on a thin layer of powdering whitewash. Both the paintings and background have been reinforced with a solution of Paraloid B 72 in acetone and mounted on a wooden matrix. The wood that had lost its original cohesion has been treated with a solution of Paraloid B 72 in acetone (7%), modified with a 20% solution of ethylene polyglycol 1000 in alcohol, in 10:1 proportion. The same preparation was used to reinforce the structure of a mask belonging to an anthropoid wooden coffin preserved in small fragments.

Some conservation work accompanied the anthropological examinations of the mummies. It consisted of removal of subsequent layers – bandages and embalming substances – as well as the mounting of fragments for documentation purposes.

Decorated elements of cartonnage cases have been detached and placed on supports of the same shape as the original matrix. Distorted parts of the cartonnages have been reinforced with Paraloid B 72 in acetone and mounted on Japanese tissue.