CONSERVATOR REPORT

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"Red Monastery Nave Conservation and Training Project"

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Red Monastery Nave Conservation and Training Project

Preliminary campaign

November-December 2015

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ABSTRACT

The November-December survey at Deir el-Ahmar (the Red Monastery) ran from 11 November to 12 December 2015. The aim of the survey was to investigate the possibility of conserving the medieval paintings of the nave and to plan effectively a future project for the conservation and restoration of all the surfaces.

The survey was carried out on behalf of the American Research Center in Egypt, under the direction of Dr Michael Jones and the Ministry of Antiquities (MoA), and supervised on site by Inspector Ahmed Mohamed Ahmed Metwaly of the Ministry of Antiquities. Chief conservators Alberto Sucato and Emiliano Ricchi headed a team of five conservators: Chiara Di Marco, Emiliano Albanese, Emiliano Abrusca, Valentina Peri Proto and Riccardo Remigio. The team also included Ministry of Antiquities conservators Ahmed Nasser Mohamed Abd el-Aziz and Mustafa Ali Abd el-Karim and benefited from the generous co-operation of the inspectors of the West Sohag office of the Sohag Inspectorate.

The work carried out during this campaign consisted of ten test cleanings that acted as samples, enabling us to study the state of preservation and working methods in various representative areas of the nave. On the basis of these observations, we were able to identify which restoration techniques should be employed. The test cleanings contain sufficient information to predict what the final result in terms of esthetics and conservation of the future restoration work will be for each area of the nave. The planned content of the project is closely allied to the methods and results obtained from the restoration of the triconch, particularly with regard to the plaster and medieval paintings on the north wall of the sanctuary (Figure 1).

While carrying out the test cleanings, we also studied and explored in greater depth the methods that will form the basis of the on-the-job training program during future restoration campaigns.

Figure 1

The ten test cleanings (and their extensions) together constitute a sample that provides an idea of the time required for the various procedures as well as the duration of future missions in general, thereby enabling us to prepare a more realistic forecast of the costs of the entire project. With this aim in mind, the test cleanings were carried out as follows: seven on the painted plaster of the north (Figure 2) and west (Figure 3) walls; one on the white plaster of the upper tier or gallery (Figure 4); one on a lacuna in an area of white plaster revealing the red brick masonry of the lower part of the north wall and one on the external face of the stone southern entrance.

Figure 2

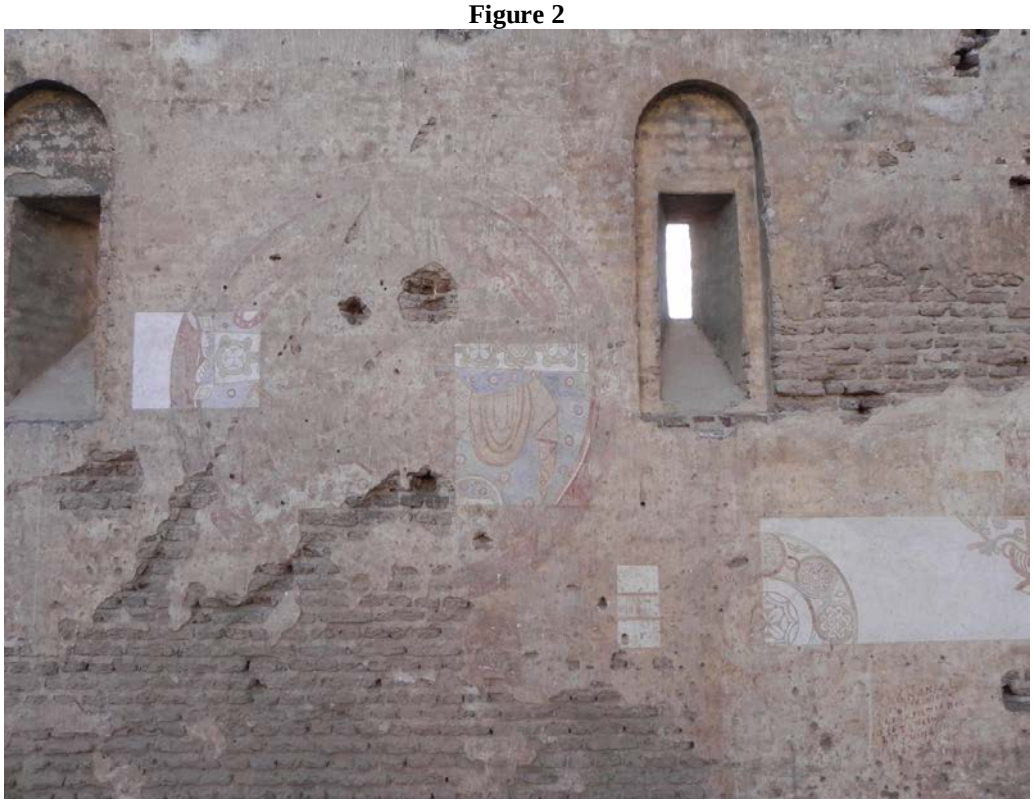

Figure 3

Figure 4

Figure 5

Figure 6

Current state of preservation

Given that the painted surfaces are exposed to the elements, their current deteriorated state can be attributed principally to environmental factors: sunlight, a wide range of temperatures (and the different responses thereto of the various materials comprising the stratigraphy of the plaster), wind, deposits of bird droppings and damage inflicted by humans.

The appearance of the surfaces has been greatly altered by the presence of centuries-old deposits of dirt and dust. The test cleanings also enabled us to ascertain the nature of these deposits in the various areas examined.

Figure 7

The test cleaning carried out in 2009 on the lower central part of the west wall revealed the presence of a single firmly attached layer of coherent deposited material. During the recent mission three areas were inspected higher up on the wall (owing to the presence of a metal scaffolding tower) and much thicker deposits of firmly attached material were observed. These deposits consisted of salt crystals emerging on the painted surface as a result of sporadic but highly damaging torrential rains (Figure 7).

In addition to the deposits described above, the three tests on the north wall revealed that the surface is covered by an impenetrable layer of black soot, produced by fires burning close to the walls. For a long time these walls were

actually incorporated in the houses of the settlement that grew up inside the nave and remained there for over a century. The extent of the blackened layer is clearly visible today and is made up of sooty deposits produced by fires lit daily in the hearths of these rural homes.

All the surfaces of the nave are currently covered in a layer of carbonized dirt. In some cases this layer has been covered by additional saline efflorescence (west end of the north wall) or thicker deposits of bird droppings, particularly around the ledges and beam holes where birds are more likely to nest. For example, the deposits of bird droppings are particularly concentrated all over the area containing the test cleaning at the southern entrance.

Figure 7

The presence of large numbers of birds also inflicts constant wear on the plaster which is riddled with small holes caused by the persistent erosive action of wind and air currents, attack by insects feeding on the straw in the plaster and numerous instances of earlier damage inflicted by humans.

In the upper tier in particular the action of the wind, often laden with sand, has caused widespread abrasion of the layer of whitewash used to finish the preparatory layer. The paint layer of the paintings in the lower tier is equally affected by the same kind of phenomenon although the damage is more localized and less severe.

The disappearance of many figurative details from the paintings can be attributed to the deterioration of the binder as a result of continual exposure to the sun's rays. This has caused all painted details applied using the encaustic technique to be lost over the past centuries.

The test cleaning at the southern entrance revealed the presence of fragments of colour and lime plaster that originally covered the sculpted surfaces. The loss of this layer was caused by extensive saline efflorescence owing to damp and the natural soluble salt content of this type of miocene limestone.

Working Methods

The masonry is of fired brick that is partly medieval and partly late antique. The late antique bricks were probably reused in rebuilding work following structural collapses. The bedding mortar is made of lime, sand, medium and large inclusions of fragments of local brick and brick dust. The mortar is grayish in color as a result of numerous black inclusions from the insides of the fired bricks (Figure 9).

Figure 8

As already described in the Fall 2011 report, the plaster is made of lime and sand with a generous amount of straw in the mix. It is pale yellow in color and the sand it contains is very fine-grained, like that found in the vicinity of the monastery. The straw content of the plaster meant that it could be applied in layers ranging from 5 to 10 mm in thickness (Figure 10).

Figure 9

Figure 10

The plaster is finished with a thin layer of white wash, probably limewash (Figure 11).

The test cleanings carried out on the west wall confirmed the presence there of paintings comparable in style and working method to the crosses restored in recent years in the facade of the triconch (Figure 12; see Figure 1).

The preparatory drawing in yellow ocher is often executed with the aid of a compass and builder's cord to construct a geometric design (Figure 13).

Figure 11

Figure 12

Figure 13

A simple palette was then used for the painting, comprising familiar local colors such as red hematite, yellow ocher and carbon black, enriched by an intense Egyptian blue.
Small touches of white in the form of beads, small circles and other fine details are used to enhance the finished paintings.

The scene depicting the martyr on horseback on the north wall has the same white finishing touches (possibly painted in white lead if comparable to the horseman in the triconch). However, Egyptian blue is not used in this painting and the preparatory design (including the lines applied using a builder's cord) was executed in red hematite (Figure 14).

Figure 14

At this time it is difficult to put forward a precise date for these paintings, let alone reconstruct the sequence of different types of painting or decorative phases. However, the theory proposed over the past few years, suggesting that the crosses were painted as part of a more organic project connected

with the rebuilding of the monument, is still plausible. In the context of this hypothesis, the martyrs on horseback appear more likely to be isolated figures added at a later stage (Figure 15).
The entrance in the south wall has been completely repainted. The simple polychrome scheme obtained using only three pigments (yellow ocher, hematite and carbon black) enhances the undercut elements and highlights those in relief (Figure 16).

The pigments were applied over a thin layer of whitewash painted directly on the stone. Around the joints between the stones and on the flat surfaces, this layer gives way to a thin plaster of lime and sand.

Figure 15

Restoration work carried out

The surface area of each of the ten test cleanings carried out during the campaign is approximately 1-1.5 m^2. The working methods are those used since 2009 when, together with Luigi De Cesaris, we carried out a short preliminary inspection campaign on these same walls, involving some limited test cleanings. In view of the proven effectiveness of new methods and materials used in the most recent restoration campaigns in the triconch, a number of new micro-tests aimed at solubilizing substances and deposits of dirt covering the painted surfaces were carried out in order to bring the guidelines for restoration up to date. A portable USB microscope was used to assist these micro-tests, enabling us to identify more easily the material to be removed and verify the state of the original surface before, during and after cleaning.

The first step was to remove dust from the surfaces using soft bristle brushes. In places where portions of plaster and paint layer were in immediate danger of becoming detached, they were stabilized using small strips of Japanese paper stuck to the surface with a 15% solution of acrylic resin (PARALOID B72) in acetone. In places where the plaster had become detached from the masonry, it was consolidated using injections of liquid mortar specifically intended for lime-based plaster and compatible with the original plaster. Where the paint layer had become raised, it was consolidated by means of injections of a 15% emulsion of acrylic resin (ACRYL 33). In some cases it was necessary to apply light pressure with a flexible spatula, interposing a sheet of polythene between the spatula and the surface. Pointing was carried out using a mortar comprising lime, local sand and powdered limestone similar in terms of composition and appearance to the original plaster.

The preliminary phase of cleaning the paintings involved the use of organic solvents applied on Japanese paper with the aim of solubilizing any organic substances covering the painted surface, particularly on the west wall. Dirt, encrustations, salt blooms and sooty residues were therefore solubilized and removed using applications of inorganic salts (ammonium carbonate) dissolved in water with a concentration of 70g per liter and applied in gel or cellulose pulp for 7 or 15 minutes respectively. These methods allow us to vary the number and length of the applications without soaking the wall excessively (Figures 17, 18, 19, 20 and 21).

Figure 16

Figure 17

Figure 18

Figure 19

In places where the plaster was undecorated, a very small amount (2%) of Tetrasodium EDTA was added to the solution. Once cleaning was completed, care was taken to remove this entirely by thorough rinsing. The cleaning system and solution described above proved particularly effective in the test cleaning on the unpainted plaster in the second tier of the women's gallery (see Figure 4).

Figure 20

Where the surviving painted surface appeared especially fragile, the solution was rolled on through a sheet of Japanese paper using a wad of cotton wool. This technique proved necessary for the martyr on horseback (north wall) and the blue pigments (west wall) in general.
Some of the outlining of painted shapes that appeared particularly delicate was carefully fixed on a case-by-case basis using a solution of acrylic resin (5% PARALOID B72) applied with a brush. Once the cleaning operations were complete, this fixing was removed using organic solvents applied through Japanese paper. The paint layer was then consolidated by applying a low percentage solution of acrylic resin (1.5% PARALOID B72) using a spray or, where possible, a brush.

Finally, the lacunae in the paint layer were reintegrated using the toning-down technique and special stable and reversible watercolors.

The cleaning of the limestone elements of the southern entrance required preliminary work to remove the thick layers of pigeon droppings by mechanical means. Subsequently, a compress of ammonium salts in solution and cellulose pulp was applied for ten minutes. Next, the fragments of original pigment discovered on the stone were carefully cleaned using wads of cotton wool and consolidated with a solution of acrylic resin so that the application of the compress could be repeated over larger areas. Once cleaning was complete, the resin was removed using acetone applied on paper tissues. The surface of the stone was then consolidated with a 1.5% solution of acrylic resin applied with a brush.

Finally, an extensive plaster repair trial was carried out on the lower part of the north wall. To this end, a mortar similar in composition and appearance to the original plaster was prepared, using a mixture of hydrated lime, local sand, local powdered limestone and finely chopped straw (Figure 22).

Figure 21

Figure 22