FINAL REPORT

Fall Mission: October 28, 2009 – December 20, 2009

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"Conservation and Documentation of the Wall Paintings at the Red Monastery, Sohag"

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INTRODUCTION

This report covers work performed under the sub-grant, "Conservation and Documentation at the Red Monaster, Sohag", an activity of the Egyptian Antiquities Conservation Project (EAC) funded by the United States Agency for International Development (USAID). The American Research Center in Egypt (ARCE) was awarded the EAC project agreement in July 2004. The following report describes work performed from October 28th to December 20th 2009.

The conservation campaign conducted in the Monastery of St Bishoi (Red Monastery) at Sohag during the autumn of 2009 involved various parts of the building: the uppermost part of the facade (F) down to the second tier[1]; the north corridor (NEB) and the diaconicon (SEC). Test cleanings were carried out in the first tier of the east conch.

Our work allowed us to verify the presence on the vault of the north corridor (NEB) of medieval plaster similar in appearance and composition to that in the nave. On the facade (F), work was carried out on various surfaces including the late antique plaster, the medieval plaster, the stonework, the woodwork and the limestone repairs and plastering carried out by the Comité and the Egyptian Antiquities Organization.

Fig. 1

[1] This campaign has seen the completion of the facade. The restoration of a few areas near the floor will have to wait until the scaffolding is removed.

The work on the facade focussed on the right side (south) and enabled us to recover a significant percentage of painted surface.
In this area we were able to explore in greater depth the technical characteristics, state of preservation and earlier restoration work by adapting the working criteria, guidelines and methods already applied on the north side to the different materials and surfaces.

In the prothesis (NEC) the restoration of the north arch was started and completed. In the adjoining corridor (NEB) two layers of modern plaster were removed from the vault in order to reveal the medieval surface.

On the west wall of the same corridor restoration procedures revealed a wonderful depiction of the Madonna with the infant Christ at her breast. In the corridor both splays of the windows in the north and east walls were also cleaned.

In the diaconicon (SEC) the modern plaster has now been removed from over three quarters of the entire surface of the the vault. It is now possible to make out the underlying geometric decoration although it is very patchy. All the unpainted plaster in the diaconicon has now been cleaned and treated right down to ground level.

Two major test cleanings have been carried out under the right niche (south) on the ground floor of the east lobe in preparation for the work of forthcoming missions. These test cleanings have revealed a typical *velaria* painting of considerable size. In the same lobe the altar has been removed, revealing a concealed limestone stele[2] (Fig.1).

In the triconch we completed the treatment of the monumental north column of the triumphal arch and started a large test cleaning at the base of the south column. All areas of intervention were comprehensively photographed before, during and after restoration.

[2] During the mission Father Maximus El Anthony and Dr. M. Johns removed the altar installed in the east lobe subsequent to the work of the Comité. The altar was made of bricks bedded in a mud-based mortar with an external cement plaster. During the dismantling process a late antique limestone stele set into the brick structure and wrapped in a piece of green acrylic material came to light. It is decorated with a carved cross inscribed within a circle and surrounded by plant motifs. This stele appears in a photograph taken by the Comité, set into the wall of unfired brick dating from the medieval period at the height of the second tier in the north lobe (Fig. 2).


Fig. 2

WORKING METHODS

Architecture

The facade (F) is built of blocks of local limestone, bedded in a fine-grained mortar. The joints are very precise and thin (1-1.5 mm). Unlike the masonry of the triconch where the limestone blocks are supplemented by brick infilling and mortar, the bases and interiors of the niches in the facade are entirely made of limestone.

With regard to the construction features of the facade, please refer to the more detailed description in the report on the mission of Spring 2008[3].

[3] Cf: L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report , 8 March – 20 April 2008.

On the south side, the blocks comprising the corner and portion of the original facade to the right of the triumphal arch appear to have been tampered with. The south corner, from the stone arch providing access to the south corridor (SEB) up to the highest tier was almost entirely rebuilt by the Comité. The arch was almost entirely rebuilt using new stone blocks (Fig. 3).

Fig. 3

The uppermost tier was completely rebuilt in brick. In the area between the second and third tiers there is a ledge of dark stones which appear to be volcanic in origin. The architectural role played by this ledge and the reason for its presence require further exploration. The ledge could be associated with the construction of a wooden floor connected to the balcony or a women's gallery (Fig. 4).

Fig. 4

Work in the area between the protesis (NEC) (Fig. 13) and the adjoining corridor (NEB) has verified that the masonry is of brick and that the bricks are bedded in a straw- and mud-based mortar[4].

The removal of non-original plaster from the vault of the corridor (NEB) has confirmed that the masonry structure does not predate the construction of the triconch. Here too the masonry comprises fired bricks bedded in a mortar of mud and straw (Fig. 5).

[4] L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report , 26 October – 21 December 2007; L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008.

Fig. 5

As already stated in the Spring 2009 report, the extensive repairs to the plaster in the diaconicon (SEC), lead us to believe that similarly extensive work has also been carried out on the masonry.

Plaster

Facade (F)

The work has allowed the recovery of a considerable amount of third-phase plaster including the flat panels, the interiors of the niches, the molded elements of the pilasters, the semi-columns, the semi-capitals and the area to the right of the uppermost window. Portions of whitewash from the fourth phase are present on the top part of the facade inside the niche in the third tier and on the capital of the south monumental column. The medieval plaster based on lime, powdered limestone and straw is only present in the second tier where a large undecorated fragment is extant (Fig. 6).

Fig. 6

In the third tier, the wall on the right side (south) was strengthened by the Comité. The restoration work was covered by a layer of white gesso-based plaster (Fig. 7) of relatively recent date that shows the outline of the blocked-up window (Fig. 7).

Fig. 7

North Corridor (NEB)

During this mission we worked on the west lunette and the whole of the vault of the corridor.

On the west wall, the left side is late antique while the right side was entirely replastered during the medieval period. The late antique plaster is made up of a mortar based on materials typically on hand (lime and local sand) and is distinguished by a light color and smooth white surface finish. This third-phase plaster, now in an extremely patchy condition, overlies the first-phase plaster (the same plaster as the corridor) which has been distressed with a pointed instrument.

At the time of the subsequent cycle of painting by the artist of the fourth phase, a slightly irregular coat of pinkish white wash was applied over this, covering the preexisting painting. Where the white wash is patchy, decorated fragments of the underlying paint layer can be seen (Fig. 8).

Fig. 8

The medieval plaster in the corridor, the vault and on the right-hand side of the west lunette has a similar composition, an average thickness of approximately 8-10 millimeters and straw in the mix[5].

Diaconicon and south corridor (SEC - SEB)

The plaster in the diaconicon (SEC) was applied in modern times, possibly between the Comité's restoration campaign and the twentieth-century restoration work carried out by the Egyptian Antiquities Organization. The mortar used is distinguished by a mix of lime and fine sand that gives the plaster a yellow color. The surface of this plaster follows the irregular outline of the masonry (Fig. 27).
On the vault the new plaster has covered the preexisting fragments. Owing to the removal of the modern plaster, a large painted area in a very patchy condition has been recovered (Fig. 9). The characteristics of the late antique plaster in some respects (Figs. 30-31) resemble those of the plaster in the adjacent corridor (SEB) and even in the north corridor (NEB)[6].

[5] A fine white adherent mortar with a low percentage of sand and a considerable amount of straw in the mix. The surface finish of this plaster consists of an irregular coat of white wash.

[6] During the Spring 2010 mission we intend to compare the plaster of the vault of the diaconicon (SEC) with the late antique and medieval plaster types in the church. At present however, the scarcity of straw inclines us to attribute this plaster to a late antique rather than medieval phase.

Fig. 9

Paint layer

Facade (F) (south side)

During this campaign the restoration work has revealed a great deal of the third-phase paint layer. From an iconographic and decorative point of view, it displays a typical style of decoration similar to that on the opposite side of the facade and including flat panels of imitation marble.
Starting from the upper tiers, in the third tier there is a small niche (Fig. 12) decorated with *velaria*. This niche is similar in architectural structure and decoration to the one on the north side (Figs.10-11) .

Fig. 10

Fig. 11

Fig. 12

On the painted surface of the niche there are a few fragments of white wash from the period of the *Virgo Lactans*. During the fourth phase, the decoration was completely redone, and the preexisting paintings were completely covered by geometric designs and circular and lanceolate motifs. On the right-hand side of the lunette, a particularly well-conserved pink pigment forms the background to the decorative elements[7] (Fig. 13).

[7] This pink pigment appears to resemble closely that used in the north and south apses to paint the backgrounds of the lunettes containing the prophets and evangelists.

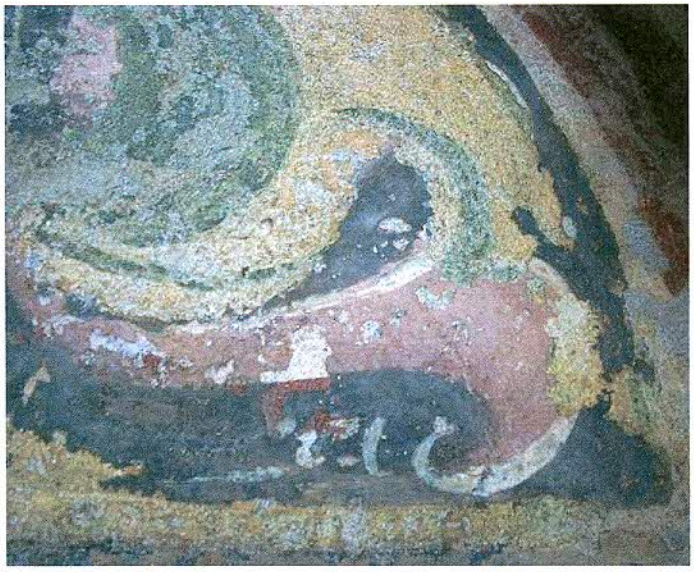
Fig. 13

In the lower register there is a rectangular panel decorated with a geometric motif against a background of encaustic green[8] and pink pigments.


Fig. 14

The painter of the *Virgo Lactans* subsequently covered this panel with the usual white wash and inscribed it in Coptic. The white wash did not adhere properly to the surface owing to the use of encaustic pigments. Much of it has fallen off, leaving only the remains of the inscription (Fig. 14).

In the second tier, the semi-circular niche decorated with a *velarium* shows close similarities with the corresponding niche on the other side (north).

[8] This has been completely lost today.

Still in the second tier, the figure of a person praying (Fig. 15) is depicted to the left of the niche just described. This particular painting is the only one of its type in the facade. The figure is wearing a close-fitting cap and a white robe. The background is light and hazy, leaving visible many of the green lines of the preparatory design. The belt and trimmings on the gown are painted in red and brown and decorated with a series of small circles.


Fig. 15

The top of the background to the figure is painted a light blue obtained by mixing blue pigment with a lot of white. At the top left there is a very patchy Coptic inscription, probably the name of the individual.

On one of the few original blocks remaining in the arch above the doorway giving access to the south corridor (SEB) a typical first-phase painting has been preserved on top of a thin coat of white wash applied to prime the stone. This painting comprises a geometric motif with orthogonal lines overlying each other in the Greek manner, painted using a simple and limited palette (Fig.16).

Fig. 16

North corridor (NEB)

In this area, all the conservation and restoration procedures have been completed with the exception of the incorporation of the gaps into the plaster of the niches.

The treatment of the painting on the west wall has been completed, revealing beneath a thick layer of dirt, mud and cement residues, a depiction of the Virgin with the infant Christ at her breast (Fig.17).

Fig. 17

Fig. 18

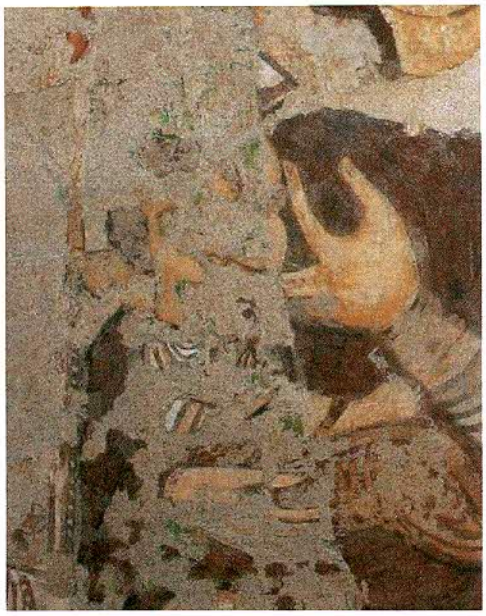

Fig. 19

On the basis of technical similarities and stylistic comparisons, we can say with some certainty that this painting belongs to the fourth phase of painting. Its close relation to the *Virgo Lactans* in the north lobe is clear even though in this case the Christ child is on the

left of the Madonna (Fig. 19). Also on the left of the enthroned Virgin is an archangel facing the center of the composition and holding in his right hand the holy bread (Fig. 18). On the underside of the arched passage between the prothesis and the corridor occasional fragments of the surviving paint layer can now be seen. Two different phases, one partially overlying the other, can be distinguished. Of the earlier phase, probably the first, all that remain are a few stylized floral motifs that originally had an encaustic finishing. The overlying painting presumably belongs to the fourth phase. The few remaining fragments suggest that two figures with halos were depicted there[9].

Diaconicon (SEC)

We worked in the southern half of the diaconicon (SEC), revealing a great many fragments that greatly assist our understanding of the decorative scheme[10] (Fig. 20) .

The decorative scheme, already described in the Spring 2009 report, comprises a classical-type cornice that runs the length of the external perimeter of the vault and encloses a large roundel painted with geometric motifs. The internal space of the roundel is divided up by radii and concentric rings. The keystone is a piece of carved limestone positioned at the geometric center of the painting. In a limited area it has been possible to observe, under a raking light, that the design of the large circle was laid out by incising the plaster.

Fig. 20

[9] The extremely patchy state of the paint layer may suggest that in the past there was a definite intention to remove the paintings, perhaps because they were in a delapidated state.
[10] The remaining quarter of the vault still covered with modern plaster is therefore still to be completed.

The fragmented state of the plaster has so far prevented us from attributing it to a particular period of painting. The iconographic features and certain aspects of the slightly opaque painted surface could suggest a phase of painting coming after the late antique[11].

Triconch, east lobe and triumphal arch

Two test cleanings have been carried out in the first tier on the south side of the east conch. The cleaning operations have brought to light an elegant painting featuring *velaria* that runs from the bottom of the niches down to ground level along the entire perimeter of the conch (Fig. 21).

Fig. 21

[11] It is worth remembering that there is a similar painted motif on the facade (Fig. 54) (cf: L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008. We think it would be better to await completion of the work in this area before undertaking a more in-depth study, supplemented by laboratory analyses.

The painting can be attributed to the third phase and bears a close resemblance to the techniques used to paint the *velaria* in the niches of the church. Here too, a small well-preserved section of the fringe has survived on the lower edge. The palette reflects that previously described for the third phase: red, black, green and white tempera colours are used in the design and background. The pink and green encaustic pigments used for the floral motifs painted in the center of each *velarium* [Translator's note: the rest of the Italian sentence is missing.]

The restoration work also involved both the monumental columns of the triumphal arch. In the center of the shaft of the north column, there is a patchy area of white wash where fragments of a Coptic inscription[12] written in ocher can be made out (Fig. 22).

Fig. 22

[12] At present, it is not proving easy to decipher the inscription.

STATE OF PRESERVATION AND PREVIOUS RESTORATION WORK

Masonry

Facade (F)

Please see the Spring 2008 report for a description of the state of preservation and special features of the masonry structure of the facade and changes made to it since it was first built[13].

We will limit ourselves here to a description of the state of preservation of the south side of the facade. The masonry structure of the upper tiers in the area between the two pilasters that mark the passage to the triconch retains most of its original elements. A limited number of blocks have been replaced. The conches in particular suffer from missing blocks, especially along the jambs and corbels which are fractured and have sections missing. The semi-capital of the left pilaster and several blocks associated with it have been replaced[14].

In this area the break is particularly clear between two plastered blocks that were both part of the same design featuring a painted panel with a cross inscribed within a circle and geometric and floral motifs (Fig. 23).

[13] L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008.

[14] The numerous attempts at restoration, the removal and repositioning of original blocks and the repairs with new blocks carried out by the Comité have obliged us to document the entire surface during our work to make it easier to understand the original phases and distinguish them from the repairs. Once the graphic recording is finished, we will be able to mark the alterations to and modifications of the surfaces.

Fig. 23

The triumphal arch in its entirety, the arch giving access to the south corridor and the area above it were all subject to wholesale repositioning and replacement of blocks by the Comité. The Comité was also responsible for rebuilding in fired brick the upper right-hand part of the two pilasters from the level of the impost of the triumphal arch and the area to the right of the uppermost window[15] (see Fig. 7).

South Corridor (SEB)

In the south corridor (SEB) the extensive repairs to the plaster carried out during the modern period have prevented us from analyzing the state of preservation of the masonry structure[16]. In the archway linking the corridor (SEB) and the diaconicon (SEC), the partial removal of the modern plaster has revealed badly deteriorated masonry and only a few fragments of original plaster.

North Corridor (NEB)

The masonry structure of the medieval vault is well-preserved apart from the presence of small cracks not connected with static problems in the vault.

[15] This area appears to have been replastered with a gypsum-based plaster during the 1990s.
[16] The major repairs to the south-west corner of the facade and close observation of the wall from outside in the external rooms to the south of the sanctuary suggest a large-scale undertaking aimed at consolidating and repairing the masonry structure.

At the center of the lunette, a vertical crack, repaired in antiquity, runs from the top of the vault to the architrave. This crack marks the join between the medieval masonry on the right and the late antique masonry on the left.

Plaster

Facade (F)

The plaster on the right-hand side (south) has been less exposed than the rest of the facade to harmful natural phenomena such as atmospheric agents and the rays of the sun. Consequently the impact of these agents, particularly on the paint layer, has been less harmful. The process of dismantling and repositioning many of the blocks, in some cases incorrectly, has had a negative impact on the plaster. In fact, almost all the most exposed areas such as the corners of the pilasters, points close to joints where the woodwork has been repositioned and areas adjacent to wooden elements have lost a great deal of plaster (Fig. 24).

Fig. 24

The various forms of plaster loss described above were repaired during the 20th century by the Comité and subsequently by the Egyptian Antiquities Organization, using mortars of different kinds.

At the extreme right of the facade (south), starting from the second tier, the lime-based plaster applied by the Comité has been covered with a gypsum-based plaster. The whole rebuilt area, including the facade, was replastered with this distinctive white plaster at this time.

North Corridor (NEB)

The vault of the corridor seems to have been replastered with two recent coats, the first lime-based and the second gypsum-based. The state of preservation of the original plaster, ascertained by means of test cleanings carried out during recent missions has enabled us to recover a vast, well-preserved, medieval surface. One exception to this state of preservation is the extensive gap at the west end of the corridor.

Vertical incisions (Fig. 25) made in the original plaster to ensure that the modern plaster applied over it would adhere well can be seen all over the surface.

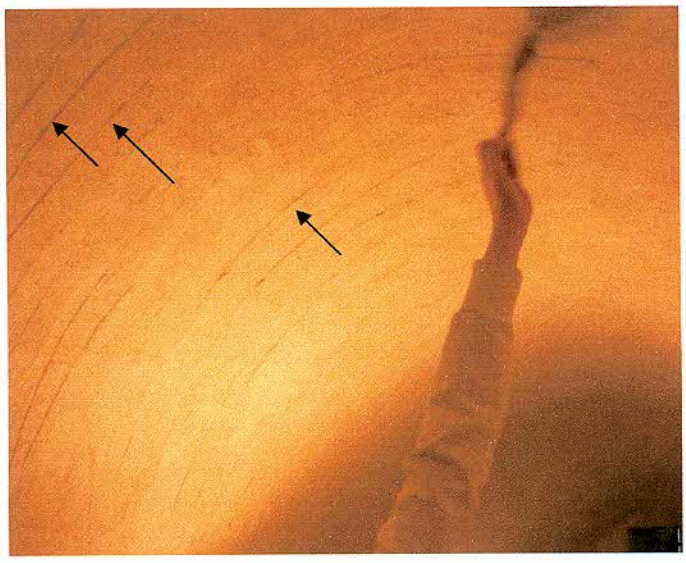

Fig. 25

Diaconicon (SEC)

As already observed in the Spring 2009 report, the modern plaster is well preserved and has few gaps. However, we noticed that the plaster was bulging strangely below the niche on the east wall. Upon carrying out a close examination of the area we found that the masonry was very damp because the baptismal font (Fig. 26) in the niche above was draining directly into the wall. We have removed a portion of masonry in this area in order to assist the drying out process and to prepare for the installation of a suitable means of drainage during the next mission (Fig.27).

Fig. 26

Fig. 27

In the southern half of the vault we removed the plaster applied by the Comité, recovering small sections of the original plaster that, despite their highly fragmented nature, still show the structural features typical of this kind of mortar (Fig. 28).

Fig. 28

Paint layer

The state of preservation of the paint layer varies widely as a result of natural and human factors. Natural deterioration is connected with the exposure of the surfaces to atmospheric agents and their colonization by various organisms. On the other hand, deterioration caused by human intervention is associated with the religious function of the various spaces and the unsuitable maintenance and restoration procedures carried out as the monument was gradually transformed over time. Please refer to the paragraph on the state of preservation of the paint layer in the 2008 report[17] for a detailed list of the main causes of deterioration.

During the present mission, restoration work was undertaken as already stated in four main areas: the right-hand part of the facade (F - south), the north corridor (NEB), the vault of the diaconicon (SEC) and the first tier of the east lobe of the triconch.

In the southern part of the facade we observed that the third-phase paint layer, particularly the parts where the encaustic method was used, had a better conserved surface than it did on the north side. We believe that the difference stems from the fact that this area is less exposed to wind (usually coming from the north) and the sun's rays.

Damage connected with alterations to the masonry has naturally resulted in the loss of the painted surface (Fig. 29) .

Fig. 29

17 L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008.

In the west lunette of the north corridor (NEB) the archangel and the Virgin with the infant Christ at her breast were concealed beneath a thick and consolidated layer of deposited material (Fig. 30).

The right-hand part of the late antique painting was lost as a result of the rebuilding of the external wall. This area was then repaired with Fatimid plaster (with the large crosses). The exposure of the facade to atmospheric agents, the infiltration of rainwater through the window over the archway to the corridor and repairs to the masonry and plaster on the west wall of the corridor have all contributed to the seriously patchy condition of the painted surface and the formation of a thick, consolidated and partially carbonated layer of deposited material.


Fig. 30

The painted surface of the diaconicon (NEB) is currently very patchy. This led to its being completely replastered during the twentieth century.

The copious carbon deposit found on the paintings in the south corridor is not present on the recovered painted surface. The paint layer is failing to adhere, partly as a result of the plastering work.

In the first tier of the east lobe two test surveys were carried out under the south niche. The paintings seem to be almost entirely covered by a thick layer of carbon-based particulate matter resulting from the number of religious activities conducted in this area (Figs. 31-32). There are numerous drips of candle wax under the ledge of the niche and many details of the painted decoration are obscured by residue from cement-based pointing. The outlines of plant motifs painted using encaustic pigments and now lost are clearly visible (Fig. 33).

Fig. 31

Fig. 32

Fig. 33

RESTORATION WORK CARRIED OUT

The first task was to remove dust from the surfaces using soft bristle and sable brushes. Where portions of plaster and fragments and stratified pieces of the paint layer (palimpsest) were in immediate danger of falling, they were secured and consolidated by means of injections of acrylic resin[18] into clearly defined areas.

This technique was employed in particular on several fragments of painted plaster on the vault of the diaconicon (SEC) and on some parts of the vault and the west lunette in the north corridor (NEB).

In places where the plaster had been repaired or gaps plugged with inappropriate mortar during earlier restoration work, it was removed mechanically using micro-chisels and scalpels.

In places where the composition of the pointing was compatible with the original plaster, it was brought up to the level of the original paint layer using scalpels, consolidated and given a patina.

This technique was employed on the vault of the diaconicon (SEC) in particular. In this case the plaster was taken down to the level of the fragments and presented.

On the triumphal arch in the facade, the pointing between the stone blocks was overhauled and repaired (Fig. 35).

[18] Cf: L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008.

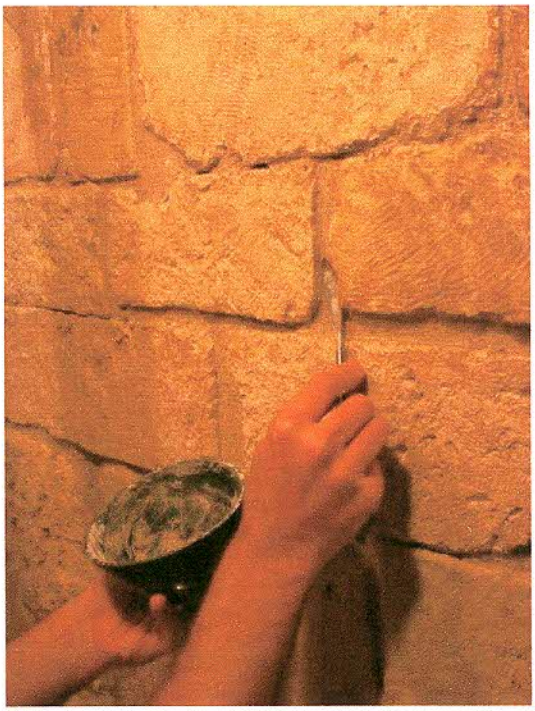

Fig. 35

Also in the facade, the painted plaster in the second and third tiers was repaired using a mix with medium-sized grains to fill gaps and finer grains on the surface (Fig. 36). Hydrated lime (1.5 parts), local sand (2 parts) and a small percentage of finely powdered local limestone (1 part) were used to make the mortar.

Fig. 36

With regard to the diaconicon (SEC) we decided to retain the plaster applied during earlier attempts at restoration insofar as it was compatible with the current state of the monument and our own restoration work. The composition of the mortar used for repairs in this area was the same as the previous one, with a variation in the percentage of sand in order to make it similar to the plaster, albeit a little softer.

The plaster was consolidated by means of injections of liquid mortar (Fig. 37) (lime-based hydraulic mortar) made up of similar materials to the plaster[19].


Fig. 37

Raised areas of the paint layer or white wash were stuck down by means of injections of acrylic resin in a 15% aqueous emulsion (ACRYL 33). In some cases slight pressure with a flexible spatula was required, interposing a sheet of polyethylene between the spatula and the surface. This technique was employed particularly (south side) on the Coptic inscription covering the pink encaustic decoration (facade) and around the west lunette in the north corridor (NEB) where the *Virgo Lactans* is painted (see Figs. 8-19).

Where the paint layer was failing to adhere, it was consolidated using acrylic resin in a low 1.5% nitro diluent solution (PARALOID B72 methacrylate) applied using a fine spray and, where possible, a brush.

The methods used to clean the wall paintings have been described in detail in previous reports.

The system developed has shown itself to be effective and safe with regard to the constituent materials and to reduce mechanical stress on the painted surface. The cleaning system involves, in the first place, the use of organic solvents applied using Japanese paper and several single-ply paper tissues to dissolve the substances on the surface (oil- and resin-based varnish, wax and grease).

Next, sooty deposits, oily residues and thin layers of saline efflorescence are removed using a slightly basic solution of inorganic salts applied on several thicknesses of paper tissue or Japanese paper and working in small areas at a time (Figs. 38, 39, 40 and 41).

[19] For a more detailed description of this work and the materials used, please see the 2008 report: L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the wall paintings – Final Report, 8 March – 20 April 2008.

Fig. 38

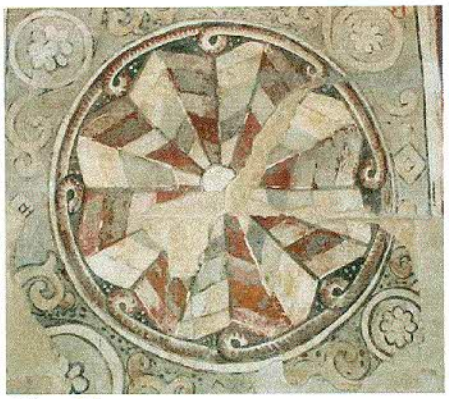

Fig. 39

Fig. 40

Fig. 41

Thicker layers of saline efflorescence are removed mechanically using a scalpel.

The cleaning of the stonework required a system different to that used for the plaster. Owing to the nature of the local limestone, the sooty residues and particulate matter were particularly ingrained in the pores of the stone, creating consolidated deposits over wide areas. To clean them we decided to use the same solvent mixture used for the plaster types but applied in a different way. In this case wood pulp with the addition of a gelling agent (water-soluble methyl hydroxyethyl cellulose) was used to apply the solvent. This type of compress allows longer application times without the danger of excessive impregnation of the target surface (Fig. 42).


Fig. 42

Application times varied from 5 to 15 minutes depending upon the thickness and resistance of the layers of dirt and incrustation to be removed.

Once the wood pulp was removed the surface was rinsed using sponges and soft-bristled brushes.

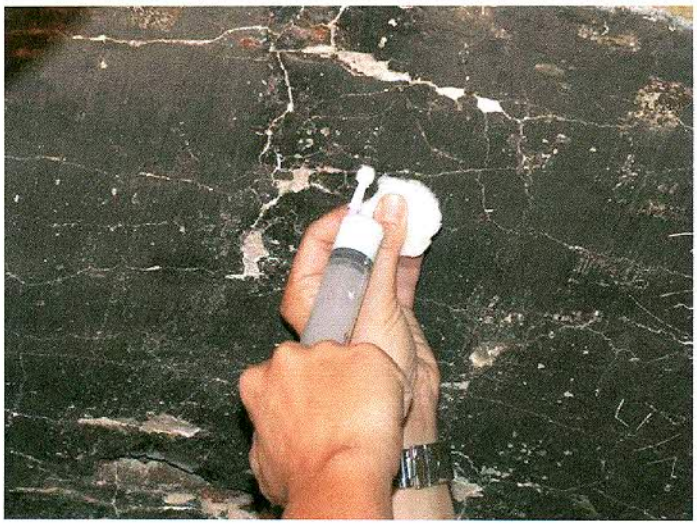
Fig.43

The same inorganic salt mixture described above was used to clean the unpainted plaster, but in this case it was applied using several thicknesses of paper tissue (Fig. 44). Once removed, the surface was well rinsed using sponges and sprays[20] (Fig. 45).

[20] In a few areas the painted plaster had to be consolidated prior to cleaning work (Fig. 43).

Fig. 44

Fig. 45

The removal of the modern plaster was completed in the vault of the north corridor (NEB) and small deep gaps were repaired using a lime- and straw-based mortar similar in appearance and compostion to the original plaster.

The paint was removed from the woodwork using a mixture of organic solvents (nitro diluent and acetone). The woodwork was treated with a permetrine-based product against attack by insects and then protected with acrylic resin in a 3% nitro diluent solution (PARALOID B72).

The gaps in the paint layer were blended in using the technique of toning down with watercolors (WINDSOR & NEWTON). This technique restores legibility to the artistic palimpsest and painted surface and clarifies the reading and order of the different paint layers[21].

[21] During this mission no areas required the hatching technique used to give continuity to restored paintings.

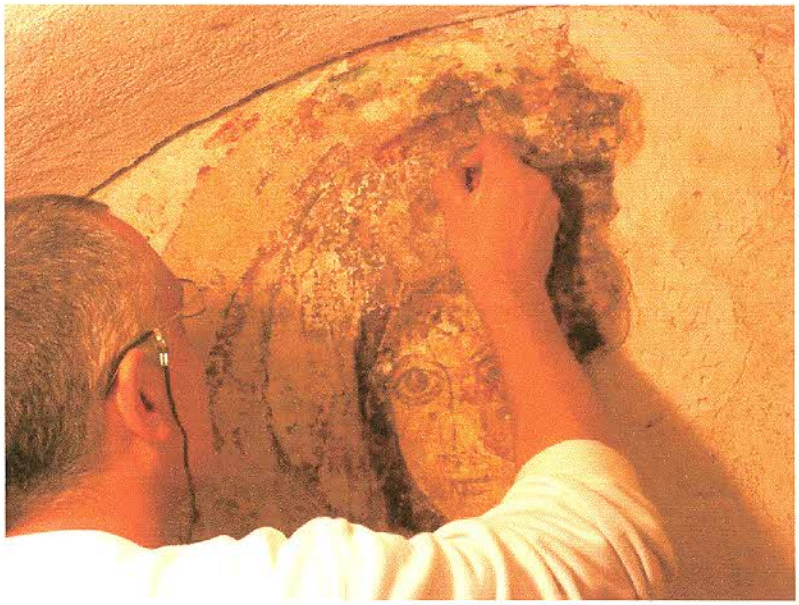

Fig. 46

Finally, the latest readings from the crack monitors installed on the access archway to the triconch were compared with those taken during the Spring 2008 campaign (Figs. 47 and 48). No variations caused by possible settling of the building were recorded[22].

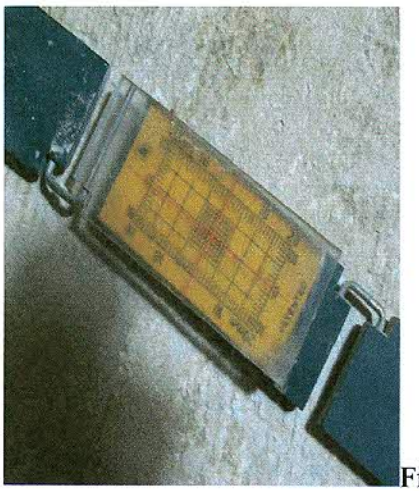

Fig. 47

Fig. 48

[22] To compare the readings taken in 2008 and 2009, please refer to the Spring 2008 and Spring 2009 reports. The discrepancy in the readings (of the order of 1/6 mm) can be attributed to a slight difference in the position of the camera each time a reading was taken.

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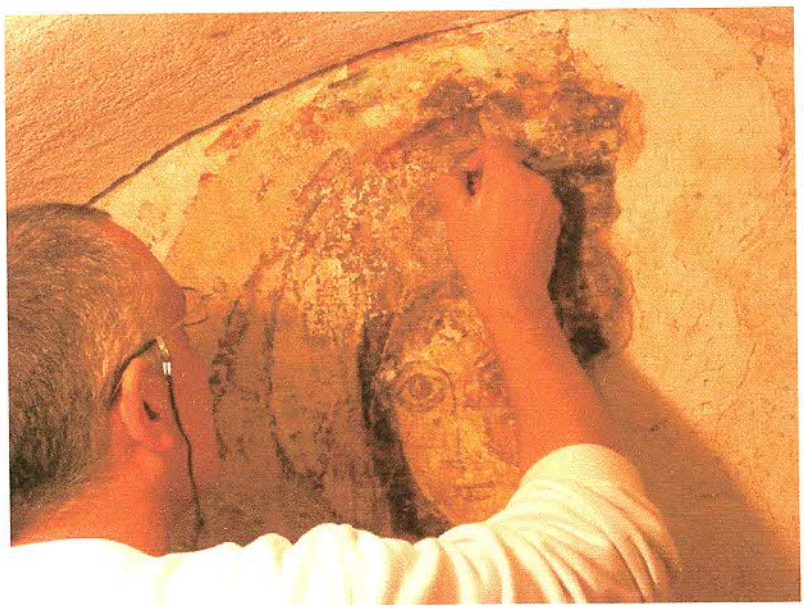

Fig. 46

Finally, the latest readings from the crack monitors installed on the access archway to the triconch were compared with those taken during the Spring 2008 campaign (Figs. 47 and 48). No variations caused by possible settling of the building were recorded[22].

Fig. 47

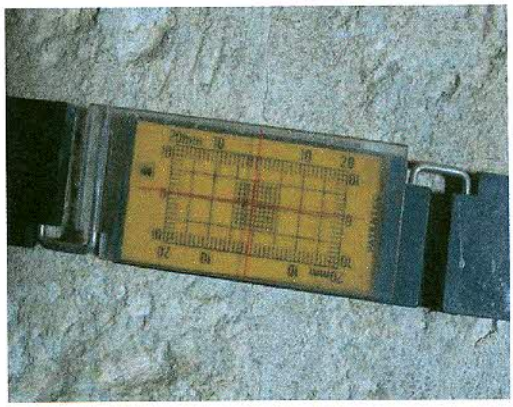

Fig. 48

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