## FINAL TECHNICAL REPORT

### Fr. Michele Piccirillo

## "Conservation and Display of Three Mosaics in the Greco-Roman Museum in Alexandria"

## **Egyptian Antiquities Project (EAP)**

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وزارة الدولة لشئون الآنار

# ALEXANDRIA GRECO-ROMAN MUSEUM MOSAIC RESTORATION

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Mario Arangio Franco Sciorilli Marco Venturi

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and others

# CONSERVATION AND RESTORATION PROJECT OF "THE STAG HUNT" MOSAIC KEPT IN THE GRECO-ROMAN MUSEUM IN ALEXANDRIA - EGYPT

# FINAL TECHNICAL REPORT

## State of conservation analyses and intervention of restoration:

The Stag Hunt Mosaic from Alexandria (Alexandria GRM Inv. N° 21643) was discovered in SHATBY - ALEXANDRIA in 1921 by E. BRECCIA. Rectangular shaped, it measures 523 X 397 cm. It was detached from the archaeological site and laid over a 6 cm cement bed, reinforced by net and metallic pivots. Then it was kept in the Greco-Roman Museum in Alexandria and positioned on the pavement in one of the rooms, later transformed in storage. The mosaic presented various elements of degradation, that affected its state of conservation. The more evident were swellings in various areas of the mosaic, due to oxidization and following increase in volume, of the iron contained in the supporting cement. Besides, there were sediments of atmospheric concretions and grout in cement used to stop up the above-mentioned swellings and integrations executed after the detachment. Over the entire work various cracks and fissures were noticed.

(A. In the Greco-Roman Museum) A first operation was carried out in the same room of the museum. The mosaic was carefully washed with pure water. After the mosaic was readable in its details, an accurate photographic documentation was carried out, and a graphic relief in scale 1:1 on nylon sheet, surveying the entire drawing and lacunae. Areas detached from the setting bed were pre-consolidated, by mortar based on lime and inert materials, while the manes, tales and hair of the figures were consolidated by Paraloid B 72 at 5 % in nitro diluents. All these figures were then protected by gauze strips and animal glue at warm. Then the mosaic was divided into 22 sections. Along the cuttings strips of cloth were glued and a line of tesserae was removed. Removed tesserae were numbered and preserved. Over mosaic two layers of cloth were glued by animal glue. When the cloth dried the various sections were removed from pavement and overturned. Cement was removed by angular grinder, supplied by carbide disks to cut stones. It was cut as chessboard and then the cement cubes were removed by hammer and chisel.

(B. In the Maritime Museum). Also, final touches were carried out by small angular grinder supplied by diamond disks. After freeing all sections by cement, Aerolam boards were prepared (new support for the mosaic), fixing by polyester resin, over one side, 0,5 cm thick stone grit, so that the new mortar bed might perfectly stick to the Aerolam. Sections were re-laid one by one on the new bed using a cement mixture composed by (in volume parts):

1 Sand

- 1 medium stone powder
- 1 refined stone powder

1.5 Lafarge hydraulics lime

mixed by water and Acrilic 33 at 15%. After some hours both cloths were removed, and the sections were partially cleaned from the glue used for the sticking. The day after a new cleaning was carried out to complete the removal of glue by water and plastic brushes. Fallen tesserae during cement removal, were re-laid by the lime mortar above mentioned. When the mortar dried, after few days, a further cleaning was carried out, first by lancet and then by chemical compresses of Ammonium carbonate, let over for a period of two hours and following washing by pure water. As we already wrote, there were on the mosaic integrations by tesserae carried out after the detachment. The tesserae were fixed by mortar based on black cement, which appeared among tesseare and in same case covered them up. This mortar was then removed by vibrant engraver, microdrill and chisels. Freed interstices were filled by liquid mortar based on lime. Other sediments, such as light cement concretions, glue, etc. were removed by micro sandblasting machine. Then all sections were put together, bordering the exceeding Aerolam and reinforcing the borders by polyester and epoxy resin.

(C. In the Greco Roman Museum) As the previous works were completed, mosaic was transferred in the Greco-Roman Museum and positioned in one of the exposition rooms. Here section cuts were closed, and mechanical cleaning was carried out into the interstices. Along borders a 4-cm aluminum frame was fixed. Then lacunae were filled by compatible mortar in grain and color, based on Lafarge hydraulic lime. To complete the work a final photographic documentation, including details, was carried out.

# CONSERVATION AND RESTORATION PROJECT OF "BERENIKE" MOSAIC KEPT IN THE GRECO-ROMAN MUSEUM IN ALEXANDRIA - EGYPT

# FINAL TECHNICAL REPORT

# State of conservation analyses and intervention of restoration:

The circular shaped mosaic, 146 cm in diameter, (Alexandria GRM Inv. N° 21739) was discovered in Tell Timai (THMUIS) in 1918. Several years ago, it was detached from the archaeological site and laid over a 6 cm cement bed, reinforced by metallic net. It was then sent to the Greco-Roman Museum in Alexandria on January 24th, 1924 and fixed on the wall by metallic supports. Waiting for a future restoration, never carried out, it was covered by two layers of cloth, glued by an unknown kind of resin, maybe Paraloid B 72.

(A. In the Greco-Roman Museum) The first operation carried out was to free it from cloths by Tinnar compresses (nitro diluents) and following cleaning of resin layer by plastic brushes, lancet and cotton flocks imbued with Tinnar.

Mosaic showed clear signs of a previous intervention of restoration, with broad integrations. Lacunae were filled by stone and glass material, which was similar to the original in color but greatly different in technical execution. Probably also the irregular presence of cement white lead, which prevented a clear reading of the mosaic and reaches 2 mm in some areas, was due to this intervention. Moreover, there were dusts and calcareous sediments, which mixed to the resin used to fix the cloth, gave birth to very tough crusts all over the mosaic. To remove them, we carried out preliminary cleaning tests in various areas with different levels of incrustation, by Ammonium Carbonate and EDTA bi-sodium salt compress.

(B. In the Maritime Museum) Such solutions did not give satisfactory results. So, we had to intervene mechanically by air-pump vibrant engraver, hammer and widia chisel, lancet, precision micro sand-blasting machine at low pressure and final touches by chemical compresses of AB 57, let over for a period of two hours and final washing by de-mineralized water.

After the mosaic was freed by incrustations which limited its reading, a graphic relief in scale 1:1 on nylon sheet was carried out, surveying the entire drawing, lacunae, and recent integrations.

Before to remove the cement bedding, a localized consolidation was carried out over the stone material which presented problems of consistency, by Paraloid B 72 at 7 % in nitro diluents. Then, two layers of cloth were glued using vinyl joiner glue (Vinavil). When the cloth dried, mosaic was overturned. Cement was removed by angular grinder supplied by carbide disks to cut stones, cutting it as chessboard and then removing the cement cubes by hammer and chisel. Final touches were carried out by small angular grinder, supplied by diamond disks. In the meanwhile, the Aerolam board was prepared (new support for the mosaic), fixing by polyester resin, over one side, 0,5 cm thick stone grit, so that the new mortar bed might perfectly stick to the Aerolam. Mosaic was then re-laid over the new bed using two different cement mixture, composed by (in volume parts):

1 Sand

1 medium stone powder medium

1 refined stone powder

2 Lafarge hydraulics lime

Into contact with Aerolam, a mixture composed by:

1 Sand

1 refined stone powder

1 glass powder (Foam)

1,5 Lafarge hydraulics lime

both mixed by water and Acrilic 33 at 15%. (The presence of Foam in the second mixture intended to decrease the weight of the entire board). After some hours the first cloth was completely removed while the second one was partially removed, leaving the central part where the mosaic was composed by smaller tesserae (2/3 mm). This last part was covered by wet cloth until the day after, when it was also completely removed.

When the mortar dried, after few days, vinyl glue used to stick the cloths was removed, by compresses of nitro diluents and plastic brushes, lancet and final touches by cotton flocks imbued by nitro diluents. After the complete glue removal, a further treatment was carried out, by chemical compress in Ammonium carbonate and final touches by micro sandblasting machine.

(C. In the Greco-Roman Museum) Exceeding Aerolam was bordered, and a 4 cm. aluminum frame was fixed. Then lacunae were

filled by compatible mortar in grain and color, based on Lafarge hydraulic lime.

The entire mosaic was consolidated by Ethyl silicate, type Waker H 100 and then by a reversible film product Paraloid B 72 at 5% in acetone.

# CONSERVATION AND RESTORATION PROJECT OF "THE ALPHIOS AND ARETHUSA" MOSAIC KEPT IN THE GRECO-ROMAN MUSEUM IN ALEXANDRIA - EGYPT

# FINAL TECHNICAL REPORT

# State of conservation analyses and intervention of restoration:

The "Alphios and Arethusa" mosaic (Alexandria GMR Inv. N° 24-20195) was discovered in SOMES (DAKHALIA MANSOURA) in 1912. Rectangular shaped, it measures 157 x 90 cm, and it is part of a more complex work. Several years ago, it was detached from the archaeological site and laid over a 6-cm cement bed, reinforced by a metallic net. Then it was preserved in the Greco-Roman Museum in Alexandria and put over the pavement of one of the rooms (Room 17).

(A. In the Greco-Roman Museum) The mosaic was very dirty due to sediments of atmospheric concretions over the surface. The first operation carried out was a carefully washing by pure water rubbed by plastic brushes. After the mosaic was freed by this incoherent material, which prevented a clear reading, a graphic relief in scale 1:1 on nylon sheet, was carried out surveying the drawing and the lacunae. Then over the mosaic two layers of cloth were glued by animal glue at warm (cervione glue).

(B. In the Maritime Museum). Mosaic was overturned and cement was removed by angular grinder supplied by carbide disks to cut stones, cutting it as chessboard and then removing the cement cubes by hammer and chisel. Final touches were carried out by a small angular grinder, supplied by diamond disks. Meanwhile an Aerolam board was prepared (new support for the mosaic), fixing by polyester resin, over one side, 0,5-cm thick stone grit, so that the new mortar bed might perfectly stick to the Aerolam. Mosaic was then laid over the new support using a cement mixture composed by (in volume parts):

1 Sand
1 medium stone powder
1 refined stone powder
1,5 Lafarge hydraulics lime

mixed by water and Acrilic 33 at 15%. After some hours both cloths were removed and the mosaic was partially cleaned from the glue used for the sticking. The day after a further cleaning was carried out to complete the removal of glue by water and plastic brushes. When the mortar dried, after few days, a further cleaning was carried out, first by lancet and by chemical compress of Ammonium carbonate and then by micro sandblasting machine.

After the cleaning the mosaic showed clear signs of a previous restoration. Even if the restoration was clear, the location of the intervention was difficult due to the use of ancient tesserae, except for the inscription where original black tesserae were replaced by stucco tesserae painted by black pigment.

(C. In the Graeco-Roman Museum). The stucco lost consistency at contact with water. It was completely removed and integrated by stone material, similar in color to the original, but cut in half measure and put under level. \_At this point another graphic relief was carried out, at scale 1:1, on nylon sheet, surveying the drawing, lacunae and new integrations in the inscription. Exceeding Aerolam was bordered and a 4-cm. Aluminum frame was fixed. Then lacunae were filled by compatible mortar in grain and color, based on Lafarge hydraulic lime. The entire mosaic was consolidated by Ethyl silicate, type Waker H 100 in two phases: the first one was localized over black tesserae, which were more degraded, while the second one was carried out over the entire mosaic.

Mider Prof. Fr. Michele Piccirillo Restorers: Franco Sciorilli and Antonio Vaccalluzzo

August 28<sup>th</sup> 2003

# FILES TECHNIQUE FOR THE MAPS















