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Working on a year-round basis, the Polish-Egyptian Mission\(^1\) conducted restoration and conservation works following a program approved by the Egyptian authorities.\(^2\)

The present report covers the period from January through December 1998.\(^3\) While the long lasting operations at the khanqah and qasr were continued,\(^4\) in January the group started on the conservation of a polychrome ceiling in the eastern sidella of the madrasa [Fig. 1,C] and the reconstruction of the simple wooden roofing over the store-room for carpets just adjacent to the eastern sidella [Fig. 1,I].

From August the ruins of the tahuna\(^5\) were used as a place for the reconstruction of wooden roofs.

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\(^1\) The Polish staff included: Messrs. Jerzy J. Kania, M.Sc.Eng., architect-restorer, director (all year except July-August); Wiesław Kuczewski, civil engineer, Site Chief (April-June); Dr. Maciej G. Witkowski, archaeologist (January-April); Mmes. Marianna Popławska (January-April); Barbara Wołosz (January-April), conservators; Ewa Parandowska, conservator-consultant (February); Teodozja Rzeuska, archaeologist (volunteer, March); Małgorzata Malińska, sociologist (volunteer, March-October); Edyta Nowak, archaeologist (volunteer, October); Jowita Matys, archaeologist (volunteer, October); Mr. Mariusz Dybich, technician (auxiliary services, all year).

\(^2\) Permanent Committee of the Supreme Council for Antiquities of Egypt.

\(^3\) For previous work see PAM IX, Reports 1997 (1998), pp. 37-42.


Due to technical conditions and the state of preservation of the ceiling, we decided on a purist approach to the conservation of the decorative polychromy and the general restoration including a reinforcing of the wooden structure. This method offers the possibility for further treatment in the future.

The following conservation measures were adopted:

- removing the dust, dirt, sand and damp chips by mechanical and chemical means;
- sealing cracks and crevices in the sub-stratum of the polychromy using sawdust and Paraloid mastic;
- filling the missing parts of the modular coffers, ceiling panels and boards of the facette with coniferous wood;
- completing and replacing the modular cross-bars of the coffer ceiling of palm wood (now either missing or eaten away by insects, e.g. carpenter-bees; *Xylocopa aestulans* L.); the new members are shaped in the same material after the original removed parts;
- filling the missing wooden elements by blocking empty inter-beam spaces with plain coniferous wood;
- fixing the loosened joints of the restored elements in the modular coffers by doweling with glue in drilled holes of 8 mm diameter;
- replacing the missing boards of the facette (*izara*) as well as broken elements of the muqarnases with new ones modeled on the original ones;
- chemical treatment of all the facette elements attacked by micro-organisms in consequence of rain water soaking, in order to eliminate dry-rot fungus. Lichenicide 246 (prod. Italy) on an ethanol base was used as a prophylactic means for newly reconstructed elements;
- soaking all the palm-wood elements attacked by insects, as well as newly reconstructed members in a solution of Xirein;
- impregnating every element of the polychromy substructure with a 15-20% Paraloid solution. The same agent but thinned down to 3-5% was used for prophylactic treatment all over the ceiling surface;
- uniform staining of the reconstructed elements to achieve aesthetic unity;
- cleaning and anticorrosive protection of all the metallic elements (studs, lamp hangers, etc.);
- fixing the polychromy to the substratum, cleaning with appropriate chemicals, aesthetic selection and protection with effective agents.

The preserved multicolor ornaments of the facette were listed and documented in photographs, linear drawings and paintings with special attention being paid to the Quranic inscription.

The original forms of the partly vanished ornaments were theoretically reconstructed in watercolors, compiled from existing fragments and from analogies. The Quranic text was identified as ayaat 287 of the Surah II, the Cow (*al-Baqara*) with a *Bismillah* formula introduced.

The ceiling decoration pattern could be identified [Fig. 2], based on the still visible remnants and supported by the parallel and surviving in much better condition ceiling of the western *sidella.*
Fig. 1. Plan of Madrasa - horizontal section at floor level of kuttab (cf. key plan with topography of the restoration works: PAM VIII, Reports 1996 (1997), p. 42, and general location plan, PAM IX, Reports 1997 (1998), p. 38): A - liwan-qibla; B - northern liwan; C - eastern sidella (focus of conservation work); D - western sidella (pre-conservation); E - sahn; F - kuttab; G - teachers room; H - minaret; I - carpet store room (reconstruction of wooden ceiling).
Samples of pigments, binding agents, substructures, gilt and fungal microorganisms were taken from the ceiling and submitted for analysis to the laboratories of the Supreme Council of Antiquities in Cairo. This research, which is part of the conservation and preservation program, and its interpretation, will complement significantly knowledge of Mameluke decorative motifs, techniques and methods.⁶

Fig. 2. Plan of the ceiling over the eastern sidella: 1, 2, 3, 4, 5, 6 - reading sequence for the partly vanished Quranic inscription on the wooden facettes; A, B, C - regularity symbols for the painted decoration of coffers (caissons).