

Bioerosione di pavimentazioni musive sommerse ad opera della spugna endolitica *Cliona celata*

Investigating bio-erosion of submerged mosaic flooring caused by the sponge organism Cliona celata

This paper deals with a peculiar alteration of submerged mosaic flooring. The alteration was discovered during preservation work carried out by ISCR's underwater archaeology unit on mosaics dating from Roman times located in the Undersea Park of Baia (Naples). The limestone tessere were found to be widely colonised by an endolithic sponge *Cliona celata* (Grant, 1826), porypherus of the class Demospongiae, family Clionidae. These organisms are able to degrade limestone by means of acid secretions, creating a network of holes and hollows inside the material, where the creatures live. From our observations, it is clear that the phenomenon of pitting caused by the growth of *Cliona celata* plays a crucial role in the deterioration of submerged mosaic flooring. From the outside, the damage is hardly visible since most of the erosion caused by the organisms takes place within the tessere, destroying the inner material and weakening the structure. Our investigation showed that, in many cases, the growth of these organisms can lead to the nearly total destruction of the stone material.

La Balsite®: un nuovo materiale per il risanamento dei supporti lignei e per la realizzazione di parti mancanti

*Balsite®: a new substance for restoring wooden panels and carvings.
Experimental work on integrating, renovating and constructing missing parts*

The need to make replicas of serial wooden items led to research and testing of new substances for use not only inside silicone-rubber molds, but also to be placed in contact with the wood in order to carry out filler work. To this end, we selected a new commercial product, called Balsite®, which has been formulated to improve the characteristics of the epoxy resin Araldite 427, widely used in the restoration and integration of artworks in wood. The first tests showed that it was possible to dilute the Balsite® so that it could be used inside the molds. The viscosity of the resin was varied in order to establish the ideal quantity of solvent, so that the resin would not lose its physical and mechanical properties. The results were positive; after various attempts, we found that by diluting the Balsite® with ethyl alcohol (ranging between 7% and 15%), it was possible to pour the resin into the mold and to obtain replicas of serial parts. Subsequent testing concerned observation of weight variation, shrinkage and possible deformation under ambient conditions of temperature and relative humidity. Hygrometric stress testing showed that the resin is able to withstand continuous stress of a higher level than that normally found in closed and confined areas, while also confirming the resin's compatibility with wood. Finally, microscope observation showed the particular morphology of Balsite®. The presence of cellulose particles as well as small spheres of polymeric material would seem to explain the resin's lightness and its compatibility with the physical and mechanical properties of wood.

ABSTRACT

Malte idrorepellenti per il restauro archeologico. Il caso della villa di Tor Caldara ad Anzio (Roma)

Hydraulic waterproofing mortars for archaeological restoration. The case of the Roman villa of Tor Caldara (Antium-Rome)

The restoration of the architectural remains of the Roman villa of Tor Caldara (Antium - Rome) made it necessary to point out some peculiar formulations of traditional mortars in order to perform the conservation of the original walls, which will remain exposed to the environmental decay. Hydraulic mortars basically containing lime and puzzolana, to which variously shaped mineral aggregates were added to approach the color of the original mortars, were chosen to operate the restorations. All the specimens prepared on the yard were tested by color and water diffusion measurements, using standard methodologies. The same specimens were then submitted to lab tests that showed the high efficacy of the waterproofing treatment, but also that the surface color markedly changes owing to the same treatment. On the contrary the addition of the water repellent Akeogard ME to the mixture before its application produces a mortar whose color is very similar to that of the original materials; furthermore this kind of mortar has waterproofing properties very similar to that produced by applying the waterproofing film on the surfaces.

La 'Pace' di Amalfi: osservazioni e indagini su uno smalto veneziano del XV secolo

The "Pace" of Amalfi: study and analysis of a 15th century Venetian enamel item

In the late 1980s, early '90s, restoration work was carried out in the laboratories of the Central Institute for Restoration (ICR), on a small enamelled "Pace" (Peace) on a copper support, from the treasury of Amalfi Cathedral. The object was originally made in Venice and dates from the 15th century. The restoration provided an occasion not only to examine the techniques used in making the object but also to analyse small enamel fragments using optical and electronic scanning microscopes, as well as X-ray microanalysis. The results of these analyses provided information about the nature of the materials and the technology for making the enamels, also gleaned by consulting recipes and lists of ingredients from the period. The scarcity of studies on this type of material led us to re-examine the item, albeit years later, and to publish the analyses and results obtained.

Una vernice 'alla cinese' di Stefano Mariconi sui dipinti di Ercolano e Pompei. Fonti, lessico, sperimentazione

A "Chinese-type" paint used on frescoes in Herculaneum and Pompeii: 18th century restoration by Stefano Mariconi

The wonder aroused by the discovery and detachment of the first frescoes from Herculaneum in the summer of 1739, was tempered by a problem that seemed to dim the success of the discovery - the immediate effect of saline efflorescence which made it almost impossible to see the painted surfaces. To resolve the problem, a special paint was used - and would continue to be used for the next thirty years - invented by a Sicilian artillery officer, lieutenant Stefano Mariconi. Lack of information in the archives regarding Mariconi and the absence of the original recipe for making the paint, suggested research in two directions: firstly, examining the manuals from that period; secondly, reproducing the original formula according to traditional methods, in order to place it in its cultural context and throw some light on the little-known figure of its inventor. The ingredients are known, thanks to a list of expenses written by Mariconi himself, so they were mixed and prepared according to the recipes con-

tained in 18th century documents. The aim was to check out the truth or otherwise of the two main reasons why restorers stopped using this paint - its marked tendency to turn yellow in time, and the fact that it removed parts of the fresco's painted surface. This paper is a revised version of a dissertation originally entitled "Paints applied to frescoes detached from sites in Herculaneum and Pompeii: examples of preservation work carried out under the Bourbons in the 18th century". Many studies have been carried out on the discoveries from the towns buried by the eruption of Vesuvius in 79 AD, but this paper reflects a new research field combining historical sources with experiments regarding the techniques used during early attempts to restore the wall paintings from Herculaneum and Pompeii.

Documenti inediti sull'attività ottocentesca dello Studio Vaticano del Mosaico

Unpublished documents on the activities of the Vatican mosaic workshop in the 19th century

In the early 19th century, thanks to new laws issued by the Pontifical State regarding the preservation of artworks, experts from the Vatican mosaic workshop undertook a wide-ranging and systematic campaign to restore mosaics in many Roman churches.

The first project concerned the dome of St Peter's basilica where several lacunae in the mosaic surface of the tambour were filled in and reconstructed. In other churches, such as San Pudenziana, where missing areas had previously been recreated by painting the surface, the mosaics were reconstructed by replacing the painted areas with tessere. Using the original drawings, the experts carried out a renovation process based on the principle that a mosaic should be a picture, *mosaico ut pictura*. Their aim was to recreate technical and artistic unity for the mosaic surface. All the materials used for this restoration work came from the Vatican - some made in the Vatican's own kiln and some supplied by external kilns - confirming the central role played by the mosaic workshop not only as a training ground for restorers, but also as a producer and supplier of tessere.

L'integrazione delle ceramiche a figure nere e a figure rosse: questioni di metodo e materiali di intervento

Restoring black-figure and red-figure ceramics: questions of method and materials used

Amongst the wealth of studies and publications in the field of ancient ceramics, there are relatively few on the question of recreating missing figurative areas. To a large extent, this is still an unresolved problem, even though several suggestions have been put forward recently both in Italy and abroad. The starting point for this paper, based on Cesare Brandi's theories, is an attempt to compare the various methods that have been devised over the years for recreating the painted surface of ceramics, pottery and polychrome wood carvings. The first step is to compare the surface, in terms of composition and colour saturation, with that of the protective "lasur" layer. To recreate the colours, we opted for the technique known as "puntinato", already used by the Institute's laboratory for polychrome wood carving, since it is the practical application of the "tratteggio" technique put forward by Cesare Brandi. The material and techniques proved to be suitable for recreating the colour and shape of the designs on two vases - one with black figures, the other with red figures. The vases were chosen not only for the different handcraft techniques, but also for the random nature of the lacunae. Applying chromatic integration to these materials using the "puntinato" technique proved to be very versatile. The completed process practically restores the item's figurative unity. With the polychromatic integration, the colouring makes the reconstructed area visible without interfering with the overall effect.