

Bad Influence - Acetic Acid Preparation of a Pterosaur in Metamorphosed Limestone



(1) Introduction

This project combined the challenge of extracting extremely fragile and fragmented pterosaur bones in a limestone too hard for percussive preparation tools. Acetic acid preparation was the obvious choice for this material, but further problems developed.

The limestone had undergone contact metamorphism, leading to uneven hardness and acid resistance.

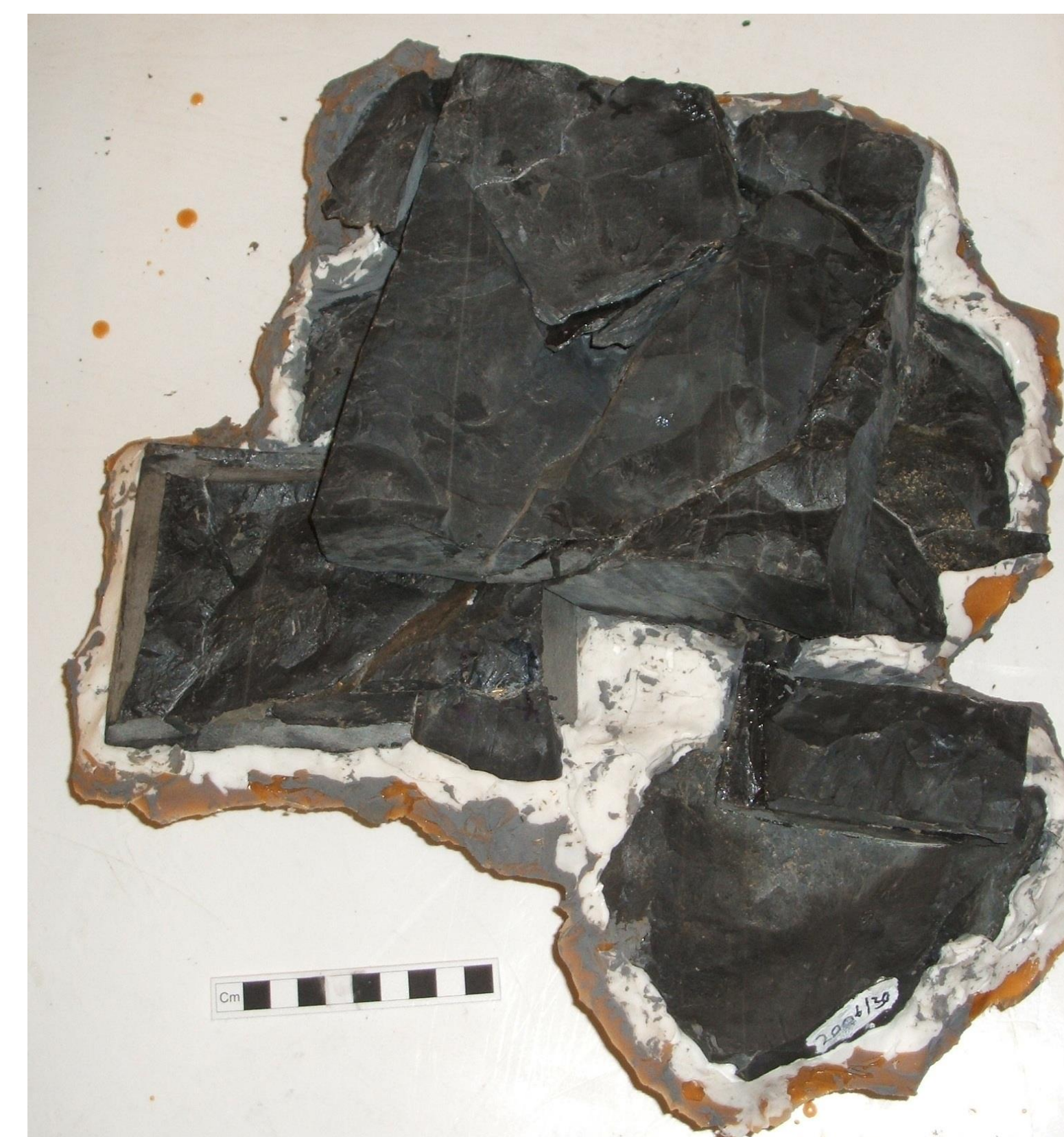
It was found that 10% acetic acid was needed for 48 hour immersions before any effect was observed on the metamorphosed limestone. This high strength had undesirably severe effects on softer sections of the matrix, causing undercuts and pockets to develop. This was successfully combated using localised barriers made from microcrystalline wax and Synocryl 9123s.

(2) Supporting jacket

The separate blocks were orientated and adhered with Paraloid B72. This resin is not resistant to acetic acid but served to hold the blocks in place during the next steps. The matrix was then supported with plastic blocks and modelling clay before a jacket was made for the surfaces which were not going to be etched. The jacket was formed with silicone rubber, polyester resin and fibre glass, making it acid resistant and supportive, but easy to remove after treatment.



The matrix supported with modelling clay.



The blocks within a silicone rubber and polyester resin mount.



The limestone blocks after the final (28th) immersion in acid.

(3) Barrier materials

Microcrystalline wax was used to fill both actual and potential overhangs where the softer matrix was more susceptible to the acid.

Synocryl 9123s resin was used to isolate areas of matrix around the bones. Tiny island-like structures began to be formed with successive immersions.



Synocryl 9123s.



Microcrystalline wax.



The temporary support was filled with plaster of Paris.

(4) Storage

After their final immersion cycle, the blocks were removed from their temporary support. A new, contoured, conservation-grade, rigid support was necessary but the bones were too fragile to take the weight of the upturned blocks. A plaster of Paris cast of the temporary support was therefore created, and this was used as a mould around which the permanent epoxy paste support could be constructed.



The blocks are now stored in an Epopast 400 mount, covered with Plastazote foam.