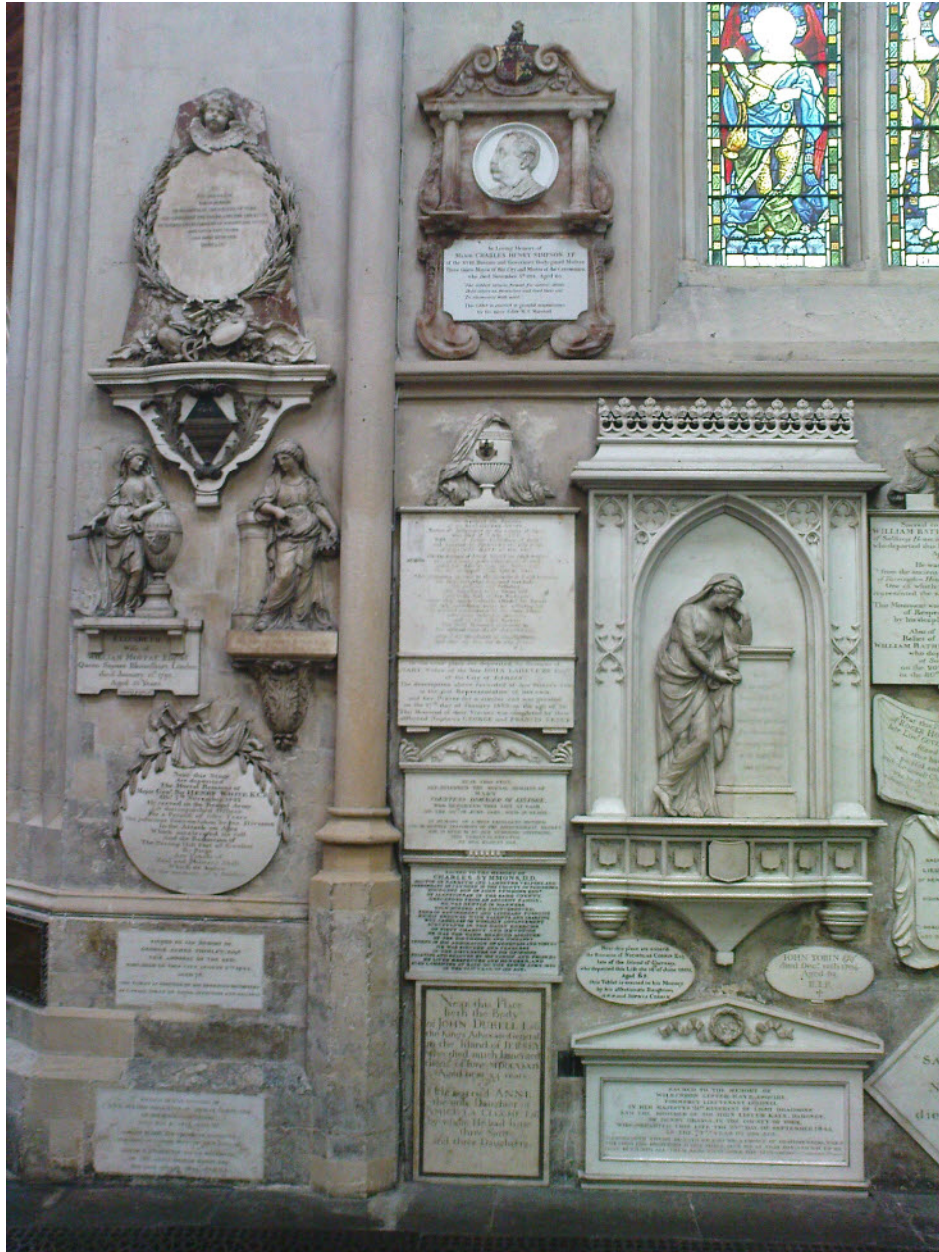


CHURCH MONUMENT HANDBOOK

TIPS FOR IDENTIFICATION, CARE AND REPAIR



Minerva Stone Conservation Ltd

We have prepared this short guide for those charged with caring for ancient stone monuments and hope that it may be found useful . It is a distillation of the experience gained by Minerva Stone Conservation over many years of undertaking monument repair and conservation along with study and anecdotal observation. The information contained herein is not exhaustive.

Church monuments can vary from a simple commemorative plaque to a large and elaborate canopied tomb holding the relics of a saint or of royalty . Interred in the churchyard of All Saints Church, Fulham, are the mortal remains of many historical 'high rollers', among them Henry VIII's doctor, one Lord Mayor of London and eight Bishops of London. Relatively humble monuments, however, may commemorate or contain the remains of giants. Below one of the simplest tomb chests lie the remains of Granville Sharp (1735-1813), the father of the slavery abolitionist movement (see case studies).

The production of monuments in the middle ages was of major economic importance. Wealthier areas of the country would have had a flourishing body of skilled craftsmen as well as money to spend on the fabrication of monuments. The wool trade, the fluctuating fortunes of estates and power, industrialization, foreign trade and the relative importance of religion all are reflected in the changing monuments of death. Beside showing art historical, technical and craft development tombs and memorials can also provide a tiny chronological history of areas as varied as armour, fashion and hairstyles, language, poetry and education.

A Brief Developmental Outline

Churches may very rarely contain the odd Romano-British memorial remnant of archaeological importance. From the time of St Augustine's mission to the Anglo-Saxons in 597 vigorous figurative sculpture was developed and fragments of crosses from this period are relatively common. From the 10th century Viking and Saxon period monuments of curved 'hogback' type are to be found. At Whitchurch,



Hampshire, a Saxon grave monument complete with latin inscription identifies Frithburga as the woman it commemorates. Parts of Anglo-Saxon friezes and panels with figure carving have been recovered by archaeologists within church fabric, usually as a result of their reuse when the church was rebuilt.

Although Anglo-Norman sepulchral monuments have been discovered *in situ* at monastic burial grounds such as at Old Sarum in Wiltshire (where imported marble from Tournai in Belgium was used), church monuments as we would recognize them, dating from the early 12th century, were simple stone coffin-shaped grave coverings incised with a cross or crozier.

Above: fragments of early 13 century Blue Lias grave coverings with stiff leaf detailing, Limington, Somerset).



Left. Effigy of Sir Richard Gyvernay, Limington, Somerset.

The variation and development from the simple stone slab to the most elaborate canopy tomb is too complex to be explored here. However, beside freestanding chest tombs, canopied recesses in church walls also housed effigies, usually on a decorated base and plinth. Early, rudimentary, low-relief, horizontal portraiture developed into full high-relief recumbent effigies. Many knightly effigies were created between 1240 and 1330. The armour-clad and richly coloured effigy of Sir Richard Gyvernay, c1320, is carved from a single piece of local Ham stone of excellent quality.

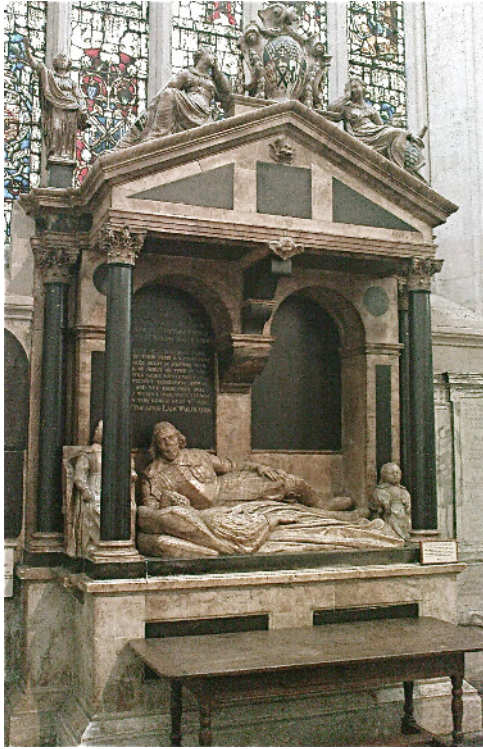
The message that he was a warrior is nothing more than spin. Instead of being depicted in prayer the mason has him posing in extravagant gauntlets, but there is no record of him as other than a shire landowner. The shield motifs exist on no rolls of arms and this forms part of the mystery associated with this tomb.



Small plates of incised 'brass' became a popular adornment on flat slabs and due to their economy became hugely popular with a newly emergent middle class, from the late 13th century for two hundred years or so. Relatively few remain and are still a target for theft today.

Colour was widely used on monumental sculpture and inscriptions, on a gesso base and often with a ground colour for added depth. Little survives as much was destroyed, scrubbed and scraped in later iconoclastic storms or during 19th century improvements. Remnants of colour can often be seen in undercuts and colour schemes may be at least partially deduced.

The Purbeck marble quarries in Dorset were opened up in the 13th century and the stone was widely transported around the southern half of Britain. Alabaster became popular from the mid 14th century, particularly from the midlands, and centres of religious sculpture grew up with wide exports to northern Europe. Trade went into decline with the reformation and from then on it was only used for high status work.



Renaissance ideas and patterns dramatically changed the English monument in the post reformation period. Newly settled craftsmen from the Low Countries introduced strapwork and curious new interpretations of classical forms and motifs to English monuments via sketchbooks and copies of renaissance prints.

Within their newly classicised surroundings, often under coffered roman arches and temple forms, the recumbent funerary figure stirred into life, leaning on an elbow, sitting, kneeling or standing, sometimes joined by family in prayer. Depiction of current dress continued (as wing collars replaced ruffs) but some chose to express their humanist erudition through classical dress.

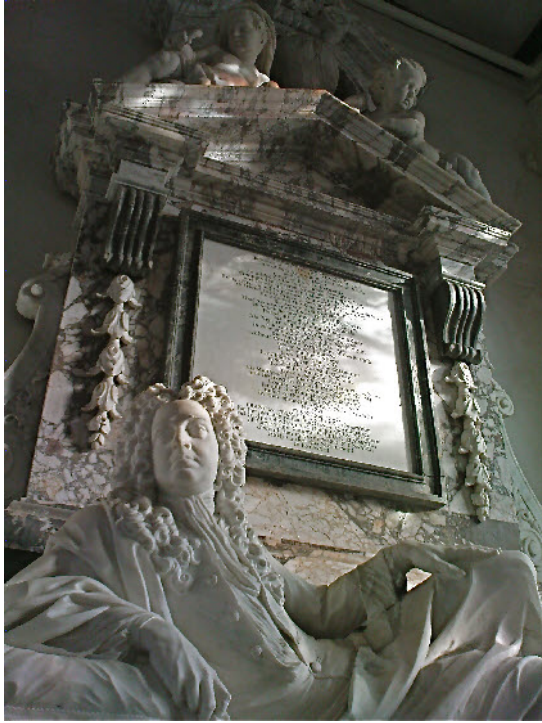
Wall monuments became increasingly popular on both grand and humble scale. Use of paint persisted, but the 17th century also saw an

increase in the use of imported marbles of different colours to provide variety and contrast to high status monuments.

Above: Fine 16th century alabaster monument, Bath Abbey

Below: Front and side elevation of weepers recorded prior to conservation from the Darre Monument, South Pool, Devon, late 16th century.



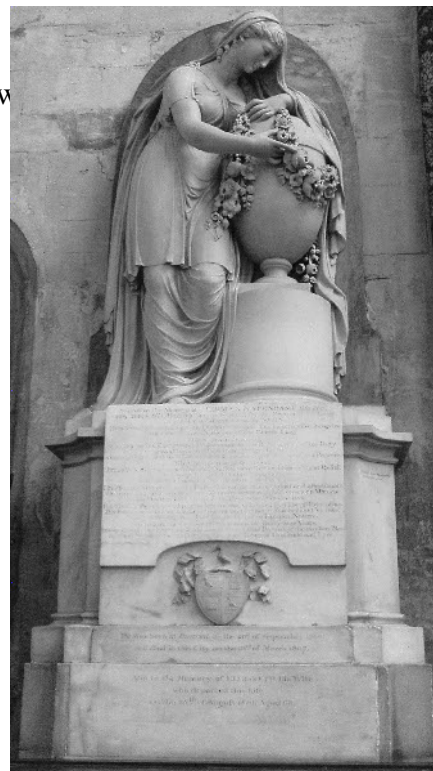


Baroque monuments, which so often sit uncomfortably in a medieval aisle or chancel were some of the greatest sculptural masterpieces produced in England in the 17th and 18th centuries. Ambitious landed gentry and aristocracy are represented with artful naturalism in the round as a figure or bust before or within architectural wall monuments, often garlanded with swags of fruit and flowers and accompanied by putti rather than cherubs.

The robust style of the early 18th century was gradually replaced by more delicate neo-classicism in the latter half. New materials such as man-made Coade Stone were also used in the production of monuments.

The first half of the 18th century can also be viewed as the golden age of calligraphy, ornamentation and lettercutting. In the ‘headstone belt’, which stretches from the Sever to the Wash, and in areas where slate was wrought, the monuments of the common man revel in the hand cut letters and idiosyncratic embellishment of the local engravers. On a clear winter’s day, lost craftsmanship can be rediscovered with the assistance of the sun’s raking light. Roman letter forms such as Baskerville (this font), created by John Baskerville in 1756 came to dominate at the end of the 18th century.

During the Greek revival period simpler, rectilinear wall monuments tended to be used, examples of which can be seen in almost every church, with low relief carving designs sourced from pattern books imported from the continent. The symbolism of death and mourning - the broken column, extinguished flame, weeping willow and so on are commonly seen. These themes continued to be used on wall plaques throughout much of the 19th century.



The gothic revival introduced more religious symbolism and statuary, gothic lettering, Ruskin-inspired colour, and gilding. Although the later 19th century introduced eclectic or exotic architectural and artistic influences, there was on the whole less expression of individuality from the mason due to cheaper and more plentiful pattern books.

The influence of Arts and Crafts brought about renewed interest in native stones, letter forms and simpler memorials. With the exception of Portland freestone war memorials, changing post-War attitudes lead to a shift away from the erection of large ostentatious individual or family monuments and a 900 year old tradition largely died out.

Monument Construction

The monument structure may reside above or close to the burial vault or grave, be a cenotaph or, very occasionally, contain the burial. Internal and external tombs share common construction methods. This is typically a supporting masonry core (stone, rubble or brick support) and a facing of worked stone fixed to the core with iron cramps. This method is adhered to even in the grandest monuments.

The Freestanding Internal or External Box Tomb

Few churches or churchyards in England will not have a complement of these mini mausolea, popular from the early medieval period to the end of the 19th century. They range from simple box and table tombs, to pedestal tombs or sumptuous 17th century Cotswold 'bale' tombs. The table tombs are slabs supported by columns. Simple box tombs may occasionally be self-supporting slabs of carved freestone, but are more commonly built around a solid core. In the case of a pedestal the form supports some other feature such as urn or pyramid. They may sit over a vault making the tombs "unfound". If stone is locally available they will reflect the regional geology or if in southern Britain may well be from the Portland series if navigable access was possible, and from further afield if funds allowed.

In an external context the slab may be enriched with an effigy or half effigy cut in shallow relief, but carving in high relief is generally found inside the church. Many would have been originally placed within a chantry chapel but may have been moved over the years.

A freestanding box tomb may be placed against, but seldom fixed to, a wall and as such are freestanding but without the usual rear panel. These structures can suffer from slightly different decay mechanisms to those of freestanding box tombs.

The Canopy tomb



Box tombs with an effigy may be further embellished with a canopy in masonry or, on occasion, in wood. The canopy may be free standing on vertical shafts or cantilevered from a wall. In the latter case an iron armature may be found within the canopy to replace the strength of the shafts. This may be a result of an "improving", although now often corroding intervention in the 19th century. Missing or damaged architectural details may have been replaced

in stone, wood or plaster and may have been fixed with ferrous dowels. A number of the elaborate finials at the tomb of King Edward II, Gloucester Cathedral, are replacements from subsequent periods, including the 21st century.

Cadaver tombs (principally from the plague-ridden 14th century) resemble a carved stone bunk-bed, displaying a life-sized effigy of the deceased on the top level and a corpse or rotted-out skeleton beneath.

The wall tomb

Box tombs were also placed within recesses in the church walls, usually with a canopy. Popular from the medieval to early Victorian period the canopy can take an ogival, crested, or four-centred arch form. It is usually partially cantilevered. It may be built into the wall or fixed to it with iron cramps that are also employed in tying the monument together.

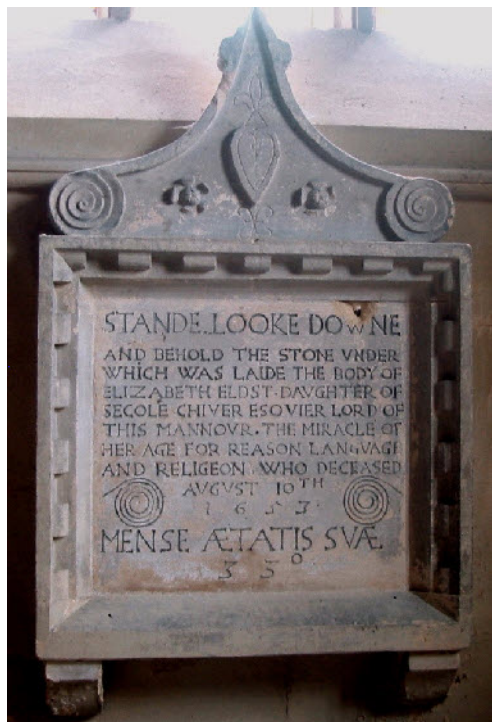
The cantilevered wall or “hanging” monument

A locally sourced stone slab (until the 18th century when imported marbles became more widely used) is supported on large stone corbels, often carved. It is secured to these with dowels (sometimes copper) and restrained at the top by iron cramps.

The 18th century wall monument became ever more elaborate in construction, often wholly built into the wall and using cantilevers to support lively statuary. The larger versions of these are really an integral part of the church wall.

Decay processes and problems

Apart from the structural considerations of combining different materials, and how safely they have been used together, the main agent of decay will be moisture in all its forms.



Problems in monuments positioned at height can often be overlooked. The simple process of the corrosion of iron fixings will always be challenging to manage and may at some time require some form of attention. Rusting ironwork may just need monitoring but iron can increase in volume by up to 80% causing associated stonework to fracture and crack. Once equilibrium is upset the monument can become structurally unsound. Cathodic protection (passing a small electrical current through ironwork to prevent further corrosion) is sometimes cited as a corrosion cure but is rarely appropriate in churches.

Left: The effect of corroding iron cramp is evident from the “scalloped” fracture at the top right hand corner of the inscription slab.

One occasionally finds that the stone selection by the mason or designer has been poor and stone has been slowly twisting or warping over the centuries; expecting too much from thin sections of marble or support from soft alabasters is a cause of this. The old mason’s remedy of great weights applied to warped marble placed on a flat surface is not to be recommended.

Collapsing vaults, movement or masonry failure in supporting walls are other reasons for monument damage. For example, a window opening may have been blocked up with poor quality rubble and plastered over to accommodate a new monument. The consequent slumping and movement here will cause huge tensions in supporting cramps and can lead to failure and collapse.

As monuments do not have damp proof courses, moisture is always present . Water is drawn up into masonry walls from the ground and evaporates through the lime joints in the stonework (and thus also to ferramenta). This passage of moisture can also carry damaging soluble salts such as sulphates, nitrates, phosphates and, at the coast, chlorides. Internally, where there has been a change in equilibrium (flooding, a leaky downpipe, a rise in ground level, a wall re-pointed in cement or a general lack of maintenance) moisture will move to different areas of the wall and monument, binding with it these soluble salts. The destructive pressure of subflorescence (crystallization below the surface) may cause the surface of the stone to be blown off. Efflorescence (crystallization on the surface) damages the pores and stone surface. Finely carved areas are most likely to be damaged having a large surface area for evaporation.



Ventilation in the church will help maintain a stable environment and relative humidity. Churches inevitably require heating and this is necessarily fairly sporadic. Condensation on the surface of the monument (particularly in the case of dense and therefore colder stone such as a Carrera or Purbeck marble) combines with salt and causes decay to the matrix of the stone and its associated fixing cramps (look for the tell tale orange stains around joints). Radiators fixed close to

monuments can cause much damage as the cyclical nature of heating and cooling creates a faster rate of salt crystallization and consequent decay, but the worst culprit is the portable gas heater that will release huge volumes of water vapour into the church atmosphere.

Above: The irreversible damaging effect of water streaking is evident on this alabaster monument.

We are glad that over 60% of English churches will have a resident bat population, however the damage caused primarily by excreta can be extensive, leaving polished or polychromed stonework pitted and discoloured. Unfortunately there is no easy solution when dealing with resident bat populations and it is advisable to get some professional assistance. English Heritage and English Nature have produced a very useful booklet (available as a PDF on line), which will help many PCCs.

Resting ladders on monuments when inspecting, maintaining or even cleaning can be very damaging. Well-meaning routine cleaning (including that of bat droppings) with a lot of water should be avoided on all stones, and can severely damage water-soluble alabaster. Ionic detergents, acids and cleaning materials should be avoided at all costs. Regular cleaning is best limited to dusting with a soft brush, although care should be taken to avoid abrasion of remnants of paint which may not be evident

Repair and Conservation

The biggest philosophical and technical issue when it comes to monument repair is whether or not to dismantle. After remaining in a stable condition for many decades, even centuries, the monument may have settled and adjusted to different movements and maintained its own equilibrium. However, a sudden environmental change (a leaky roof, gutter or change in ground level etc) can have a catastrophic effect and the decision to intervene may be inevitable. Localised dismantling to remove cramps may be possible but not prove to be cost effective in the long term.

Recording and photographic survey

Before any work is undertaken the budget must include for a conservation report, photographic record and scale drawing by a skilled conservator. Paint analysis may also be required. All subsequent interventions should then also be recorded.

Scaffolding

Many monuments and tombs may require some degree of scaffold platform for access or for lifting purposes. Non-tower scaffolding should be carefully designed so as not to affect the original historic fabric and must never be tied into the building in any way. If the church does not have a relationship with the scaffolder, the competence of the contractor in dealing with ancient fabric should be ascertained. The importance of the monument must be pointed out to the scaffolding team as well as their supervisors and a warning given not to lean scaffold poles anywhere in the vicinity of the monument. The importance of prior protections cannot be over-emphasised. Endcaps must always be used as well as a cushioning interface such as polystyrene backed plywood pads. Prior consideration and attention to detail will ensure an incident free project.

Lifting



Where a large slab is supported by the core or side masonry of a box tomb, and repair or cramp removal is necessary it may be lifted by a conventional gantry and block and tackle, which may also be fixed to a scaffold arrangement.

A portable crane is the most efficient method for lifting. These are self propelled and some

only 600mm wide which makes them particularly useful during dismantling and rebuilding as they will also fit into internal spaces. Typically the slabs may weigh anything up to 700kg. Prior to dismantling, facing up surfaces with a system of protection using acid-free tissue will help to protect painted surfaces or friable stone until it has been conserved.

Above: One of 20 box tombs conserved by Minerva at West Lavington, Wiltshire

Cramp Removal



Cramps will have been fixed into a recess cut into the stone using either lead or shellac. If they are observed to be corroding, careful drilling out around the bedding material may be required.

Removal of salt contamination

Once dismantled, individual elements of stonework can be de-salinated by an acid free paper pulp or clay poultice applied wet and left on long enough to draw out deep seated soluble salts. This approach may need many applications and is only effective if the source of the salts will then be blocked off. Certain additives may be used to remove stains or carbon deposits. If the surface has open pores or is badly decayed it may be more appropriate to use more easily removable paper or cotton fibres. These decisions should be left to a qualified and experienced conservator.

Rebuilding

Before rebuilding an indoor box tomb, the area in which it sits may require localised rebuilding and re-pointing. The monument may have stood originally on the vault or an earth or stone floor. A hydraulic lime based foundation or raft 4 to 6 inches in depth (NHL 3.5 or 5) would make a suitable separation from the floor.

In an internal context, a lead damp-proof membrane may be introduced to the top of the foundation to isolate the tomb. This must have welded (lead burnt) joints to prevent water ingress. Lead is also suitable for fixing to a vertical plane if given enough support. Careful consideration should be given to the environment of the monument before isolating it in this way.

Cores

If the original core material cannot be reused on the new lead membrane then it may be possible to reconstruct using lightweight concrete blocks bedded on a feebly hydraulic lime (eg NHL 2) which will be fairly readily reversible. Construction of the core should be slightly smaller than the internal dimensions to allow for the circulation of air. Lead barriers should isolate points of contact with the monument.

As individual elements will need to be fixed to the core (and possibly the wall) then new moisture resistant materials may need to be used. Different fixing materials have differing coefficients of expansion and it may be difficult to produce a balance between movement and stability and the selection of rigid and flexible materials. Stainless steel cramps (typically 316 grade) of the same dimension and form as the originals are the usual choice. These will have been secured in place with molten or hammered lead. It is often possible to retro-fix employing this method if the cramps are removed without damage to the mortice. If shellac was used to fix the cramp then a polyester or acrylic resin should be considered. Lime putty and aggregates, one of the weaker hydraulic limes, or fat lime gauged with a pozzolana, should be used to create the bedding and jointing mortar dependant on context.

Repairs and remodelling

As in all aspects of well-considered conservation there are no dogmatic rules when it comes to assessing the scale of repairs and (in some cases) the extent of anticipated restoration. However we still find that some purely cosmetic work is, understandably, desired by clients. Minerva's approach seldom goes much beyond structural repair and

localized consolidation of delaminating, cracked or friable stonework. With some monuments there may be an argument for restoring a degree of balance or symmetry if an element is missing. Further enhancement of detailing either by re-colouring or the addition of newly carved elements may be generally seen to be unacceptable.

Stone consolidants

Minerva seldom uses any form of stone consolidant, as it is an area fraught with problems. We prefer to respond to the specific needs of individual stone elements and recommend a regime of care and repair linked into maintenance intervals.



Repair materials

Missing areas of porous lime and sandstone can be remodelled with either putty or hydraulic lime with graded sands and stone dusts, added to taste. This has the advantage of modelling *in situ* with little cutting out and thus saving original material. Marbles and other non porous polishable 'marbles' may also be repaired with a hydraulic lime repair mix and, if required, may be polished. Other synthetic fillers in acrylic or polyester resin can also be mixed with a blend of aggregates to create an invisible repair.

Re-touching and conservation of original polychromy is best left to a qualified paint conservator.

Summary

As well as understanding the decay processes at work on a monument in isolation, it is vital to consider the wider environment in which monuments are found before considering a course of remedial action.

On founding the SPAB in 1877, William Morris spoke of the need to "stave off decay by daily care, to prop a perilous wall or mend a leaky roof". Adoption of this sensible advice will help improve the prospects for good continuing monument care.

Left: This blocked Victorian downpipe has slowly caused extensive internal and external damage to fabric and consequently the internal monuments by allowing backed up water to enter the church.

Case studies

Borbach Chantry, West Dean, Wiltshire



This small, isolated, Grade I listed chapel holds numerous important monuments to the Evelyn and Pierrepont Families who lived in the (long demolished) manor house next door. Here the saying of masses for the good of the soul of a deceased person was undertaken. The most common form of this was the missa annualis, a mass said annually on the date of the death of a person.

This chapel provides an example of the importance of maintaining the wider environment of the monument. Only minor conservation repairs and pointing were required on these monuments and, after fully boarding them up for protection, we conserved the original plaster surrounding the monuments and re-plastered and repaired adjacent areas. After we had applied several coats of

specially prepared limewash (with a pigment sourced from a local aggregate quarry) we carried out some simple maintenance; replacement of the odd missing roof tile and exterior pointing and redecoration to maintain the safe environment.



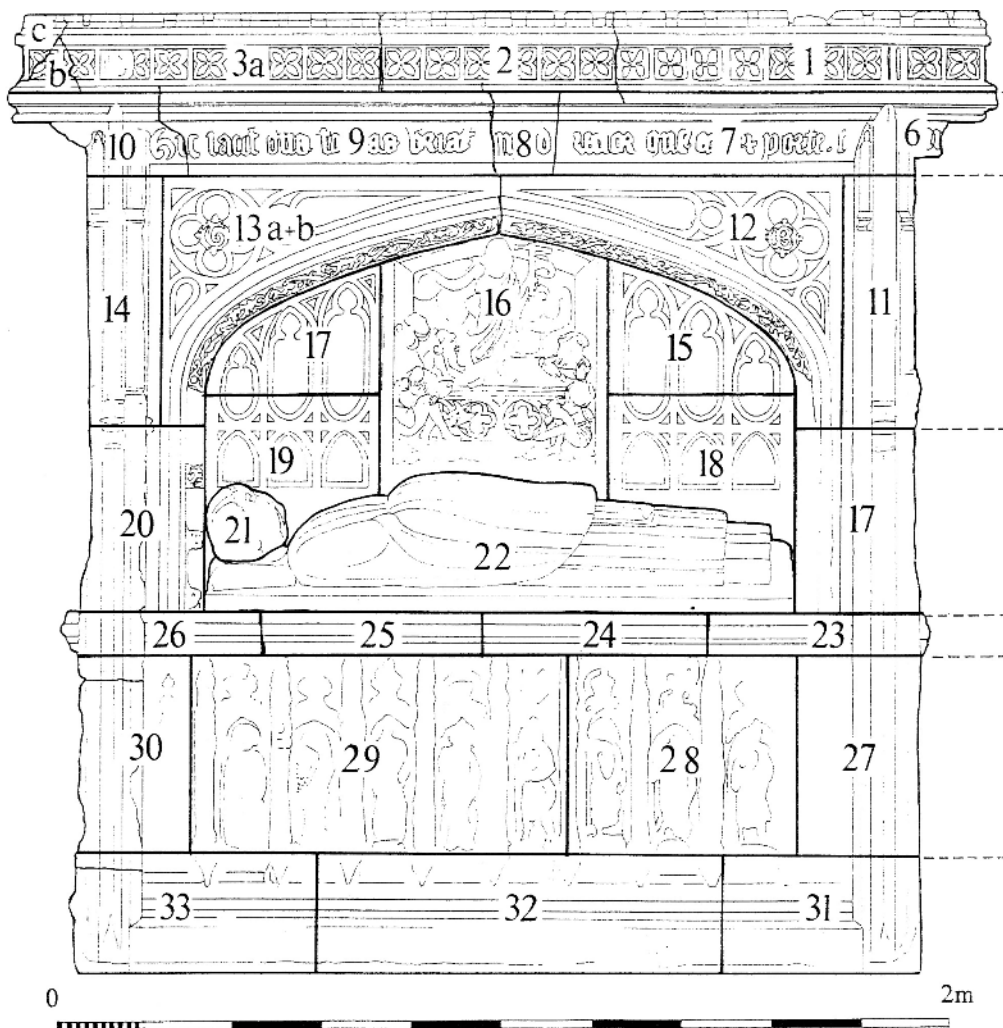
The interior of the C14 Borbach Chantry, photos © Copyright Mike Searle

Bryant Monument, St Nicholas and St Cyriac, South Pool, Devon



The monument is to Thomas Bryant, rector of the parish until 1536. He is shown recumbent in cassock, surplice and stole. The monument takes the form of a canopied recess on the north wall of the chancel and shows a resurrection carving within the recess, evidence which would lead to the suggestion that the recess was an Easter sepulchre. The feet of the recumbent figure have been cut off as if to make it fit into the canopy, and there appear to be too few apostles on the plinth below. This would seem to imply that a former Easter sepulchre is being used to house a tomb (rather than the tomb functioning as an Easter sepulchre). After recording, the tomb was fully dismantled and isolated from the external wall by a new lead damp proof membrane. Individual elements were desalinated and the substantial remains of polychrome paint conserved. The monument was then rebuilt.

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Scale drawing of monument showing composition of stone elements numbered in sequence of dismantling, as recorded by us prior to conservation in 1993.

The Tomb of Granville Sharpe, Fulham Churchyard, London.



Above: the top slab craned back into position

We found this Grade II listed tomb was in a very poor condition. The Portland limestone was suffering from subsidence within the vault, from acid rain and from rusting cramps. Pressure from the cramps had badly fractured the ledger panels and fluted corner pilasters. Once we had taken the tomb apart and rebuilt collapsing areas of the vault we could repair much of the original stonework *in situ* and refixed using stainless steel cramps and micropins, new fluted elements had to be re-carved and reinstated. We also cut a new, sensitively-placed commemorative plaque.

Blacknall Monument, 1630, St Nicholas, Abingdon



Inside St. Nicholas' church there is a good monument to John and Jane Blacknell, who died on the same day in 1625, presumably of the plague. No wonder it was not constructed until over fifty years later. John was the grandson of the man who purchased the abbey buildings after the dissolution of the Monasteries. John's charity still contributes greatly to the upkeep of the church.

The parish asked us to prepare a condition and conservation report for the monument, our recommendations were accepted by the local Diocesan advisory committee. The photograph, taken in 1896, shows loaves of bread on the table top of the monument.

St Margaret of Antioch, Leigh Delamere, Wiltshire



The remarkable 15th century rood fragment was hidden for many years under the pews of the church (the word rood is derived from the Saxon word rood or rode, meaning cross and is associated with the rood screen which would have separated chancel from nave).

At St Margaret's the rood screen has disappeared but this valuable object gives us a glimpse as to what its quality would have been. It was highly decorated, so after recording and gentle cleaning the polychrome decorative scheme was conserved. The rood was then placed in a speciallymade lead case to protect it from any water ingress and fixed into its newposition adjacent to the chancel.



Recording prior to trial cleaning and conservation



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