TECHNICAL PAPER 33

MASONRY POINTING AND JOINT FINISHING

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

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MASONRY POINTING AND JOINT FINISHING

PART 1 - SURVEY DISCUSSION AND FINDINGS

ABOUT THE AUTHOR

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He is also an apprentice trained, award-winning bricklayer working within the family building business and later a larger house builder in York. Tim was a Society for the Protection of Ancient Buildings William Morris Craft Fellow in 1992. Major projects in Scotland include the Great Hall at Stirling Castle, Kilcoe Castle in South West Cork, Brodie Castle in Morayshire, and more recently harling works at Wormistoune House near Crail in Fife. Working on smaller vernacular buildings remains a crucial aspect of his work. International roles include providing practical advice and training for The Society for the Preservation of New England's Antiquities, Historic Harrisville NH, and Queens Royal College, Trinidad.

The current research project, 'Cultural and physical factors in the history and development of traditional external wall coatings in Scotland', is augmented by the combination of previous and cumulative practical and academic experience gathered throughout a career in the building industry. The objective of the research is to demonstrate that 'harl' (common Scottish word for render) was ubiquitous and that it should also be recognised as a single element within a complete building system and not be viewed in isolation to the other processes within the construction of the wall. Lime harl may be a powerful tool in response to future climate change scenarios.

PREFACE

Technical Paper 33 is part of a series of Historic Environment Scotland (HES) Technical Papers examining traditional lime mortars and external finishes in Scotland. This paper follows on from Technical Paper 31, 'Historic External Lime Finishes in Scotland', which discussed both the proliferation and subsequent decline of full external lime coats in Scottish building practice through surviving examples. This paper looks at finishes on the masonry joint for unrendered buildings, generally called 'pointing'. The term is examined closely for it reveals much about the evolution of the masonry joint and the approach to the presentation of architectural masonry.

It is the aim of this paper to provide a study of extant examples of pointing and how unrendered masonry walls are finished in Scotland to inform and guide present conservation work. It seems likely that many customary styles of pointing used today do not appear to have historic origins, rather they are a representation of what might be termed a degraded finish. The popularity of this approach, almost international in adoption, requires examination and interpretation and will form part of a later work.

This report is presented as two parts; the Survey Discussion and Findings (Part 1) describing the main findings and results of the work, and a Gazetteer (Part 2) detailing the sites visited which, along with photographs and measurements, form an evidence base on traditional practice. It records a representative, but acknowledged incomplete, picture of regional variations in Scotland. This inevitable incompleteness aside, it will allow common themes of masonry finish to be identified, inform repair plans, and discuss how its application might be appropriate to address increased weathering of masonry structures from a changing climate.

The paper also seeks to understand why earlier types of masonry finishes have fallen out of favour and, as a result, to chart how they have been repaired or replaced. This allows consideration of what 'like for like' repairs mean and how faithful such work is to the original, but also raise awareness and promote traditional patterns and styles of pointing finishes in conservation work.

CONTENTS

1 INTRODUCTION

The objective of this paper is to set down, as far as is possible, what the range of historic masonry pointing styles in Scotland were. This is to establish a baseline of traditional styles and practices to inform both the understanding of what was done and how buildings were presented architecturally, as well as to inform repairs for the present.

An outcome of the surveying process for complete surface finishes in Technical Paper 31 was the identification of the wide range of finishes or treatments for the joint area. This observation initiated an additional survey, the baseline for this Technical Paper, because a literature review made it clear that no such assessment had previously been made.

This second survey examining the joint area was incorporated within the working programme of a wider HES funded PhD research project on masonry finishes in Scotland and their role in the protection and presentation of masonry. While the survey is extensive, it is not exhaustive. It is hoped that more variations will become clear once the wider heritage community becomes more familiar with the extent of survival of historic finishes. These finishes are often encountered in the hidden rear parts of buildings or ruins and in areas of towns such as vennels and wynds.

The term ‘pointing’ is investigated in this paper as a way of understanding how masonry finishes have developed, as the survey that supports the paper revealed a range of different materials and techniques employed. This paper also explores examples of masonry-walled buildings from across Scotland that have an extended cover to the joint and masonry, often called a ‘flush finish’. This type of joint serves a dual purpose: to protect the mortar beneath from the elements and to provide a formalising finish to the masonry frontages. The former is important, as the lime finish is often bonded to the bedding mortar, thus sealing the joint. This is seen executed in the process of ‘sneck harling’, where a harl is applied only to the joints or ‘snecks’. Whilst this primarily seals the joint, it also produces an architecturally regulating effect on the area treated. This is because on rough-cut, informal masonry, it covers all but the high point of the stone, hiding the anomalous and often rubble packed joints beneath. This formalising effect can be heightened by the inclusion of ruling out the joints, ribbon pointing or the white lining of a ruled-out joint, in mimicry of more costly ashlar work. These different approaches offer great scope to understand an architectural hierarchy of finishes which is, in turn, illuminating when trying to understand the motivations behind the construction and prevailing attitudes towards architectural style in a decorative sense.

It became clear that a dominant style was the flush point, sometimes called ‘slaister finish’ or ‘sneck point’, which was often lined out to various degrees of formality, showing an increased emphasis on the component geometry of the façade. In this study, eighteen different forms of what we term ‘pointing’ have been identified and these are presented as a summary table at the end of this section. While many of the examples shown may seem unfamiliar today, they are indicators of how important formalizing and protecting coursed and rubble stone was. Also, in identifying the differing types of historic joint finishes, it raises questions about a lack of awareness today of the different ways of finishing a joint on masonry buildings. In some cases, different approaches to joint finish

are taken even when there is photographic evidence for a historic finish or where some original material remains on the wall. To ignore or remove the evidence, however well-intentioned, fails to meet the national and international standards expected in building conservation[1]. Some of the examples shown here were skilled and time-consuming in their execution. In highlighting these examples of finishing masonry walls, it is hoped that Scotland's building conservation sector can gain a better knowledge of finishes and implement a wider variety in repair work.

The survey establishes an extensive and varied range of treatments throughout Scotland, where the gradual retreat from a unified architectural presentation was observed, often from a flat elevation with carved stone highlights to a very different stone morphology-based view. The changes in masonry style are discussed in detail to understand how and why the approach to masonry finishes has changed so much and to assess some of the reasons why complete, or nearly complete, lime coats lost favour.

At a technical level, it demonstrates that often, where cement render finishes gradually replaced lime ones, whilst they are of the wrong material for the building's technical performance, they nevertheless present the building in a more architecturally authentic way than a never-intended unfinished masonry presentation.

It is also significant that with a changing climate, and consequent increased precipitation and the resulting accelerated damage to carved stone and rubble alike, it is likely that careful consideration of the type of masonry finish will be needed to ensure the required protection of historic fabric from the effects of a changing climate.

2 SURVEY METHODOLOGY

This technical paper is a development of the survey work done for Technical Paper 31; its objectives[2] were to examine the evidence of complete lime coatings on a range of building types and dates, distributed throughout Scotland in both urban and rural locations. The survey work for this Technical Paper continued to be predominately physical and also looked at the approaches on buildings where there was not a full covering – what is termed 'pointing'. Documentary, photographic and evidence from paintings and lithographs were also incorporated within the physical inspection.

The primary sites surveyed were identified by HES recommendations, and from which more local knowledge and access was obtained; in some areas there was a second assessment as local styles and treatments were better appreciated. The assessments sought to record and catalogue the types of surface finish on a number of properties. At sites where the processes of conservation and intervention had been considerable and had taken place over many years, there was uncertainty about whether any physical evidence of early work would remain. But by careful observation much evidence was found, even on elevations that had finishes thoroughly removed, and it showed how robust lime finishes can be. The scrutiny of wall surfaces revealed multiple fragments, often disguised by lichens and algal growth, but once identified and viewed in their totality, a better understanding of the extent of lime finishes was achieved. In some cases, the HES Canmore database[3] was referred to in helping corroborate the former extent of lime coats from early photographs. The core sites were augmented by other buildings in the localities, some of which were identified by the Royal Incorporation of Architects in Scotland (RIAS) in their Architectural Regional Guides (RIAS 1986 – 2019). This in turn was supported by information from the HES Buildings at Risk Register[4]. Fortuitous encounters with unlisted and ruinous buildings also contributed to the record.

Each site, with photographs, observations and background information was made into an individual record. The record sought to capture a context image giving the totality of the site and then a series of smaller images for detailed observations of the joint. Written comment was kept short concerning the present material evidence. While record photographs were often consulted, they have not been included for consistency and brevity. Some larger complex sites, such as Floors Castle, had sufficient evidence to warrant detailed analysis (Meek, forthcoming). The collection of the 134 records form the gazetteer section, the main body of this Technical Paper.

3 THE TERM 'POINTING'

In this paper, the term 'pointing' is referring to the different methods and materials used for finishing the joint area in stone walls. This includes finishes produced as part of the construction process, as well as finishes applied after the building process was complete.

The practice of protecting walls with flush mortar work was found to be widespread in the survey, and observation showed it has been carried through into modern times with cement-based mortars. There has been some discussion about the etymology of the term 'pointing'. It has been suggested that 'pointing' refers not to the process of filling the joint, but rather the practice of ruling it out.[5] It has been found during the surveys that there is evidence to show that, when walls were constructed, the flushing up of the masonry was done as part of the building process, and that a subsequent joint treatment was unnecessary. This approach to construction is introduced in Technical Paper 31 as 'harl as you go'. This could either be the full harl or mortar spread over the surface with a trowel. The lining out of the joint was a subsequent decorative action. Having an integral single layer of mortar from the wall core through to the face means a continuous capillary connection, allowing the best curing with the greatest surface area for exchange of water vapour and carbon dioxide, necessary for carbonation.[6] This view is supported in part by the development of the tools used. Figure 1 shows an implement which a bricklayer or mason might use to point or make a line in the area between bricks or stones. This practice must have been commonplace because the tool is commercially manufactured rather than homemade. The implement has cranked handle, is V shaped in section, and is pressed into the mortar joint while the material is in a plastic state.

Figure 1 - A ruling out tool from the 19th century. The manufacturer's mark, indicating production at scale, is just visible in the centre.

A similar process of finishing the joint with a line can be found in high quality brickwork, sometimes called 'tuck pointing', and in Ireland as 'wigging'. Modern tools for finishing brick cement joints are only semi-circular. Latterly, it is likely that the term 'pointing', sometimes called 'Poynting' evolved to describe work as a repair activity and indicating the act of filling the joint in the way we understand it today (Figure 2).

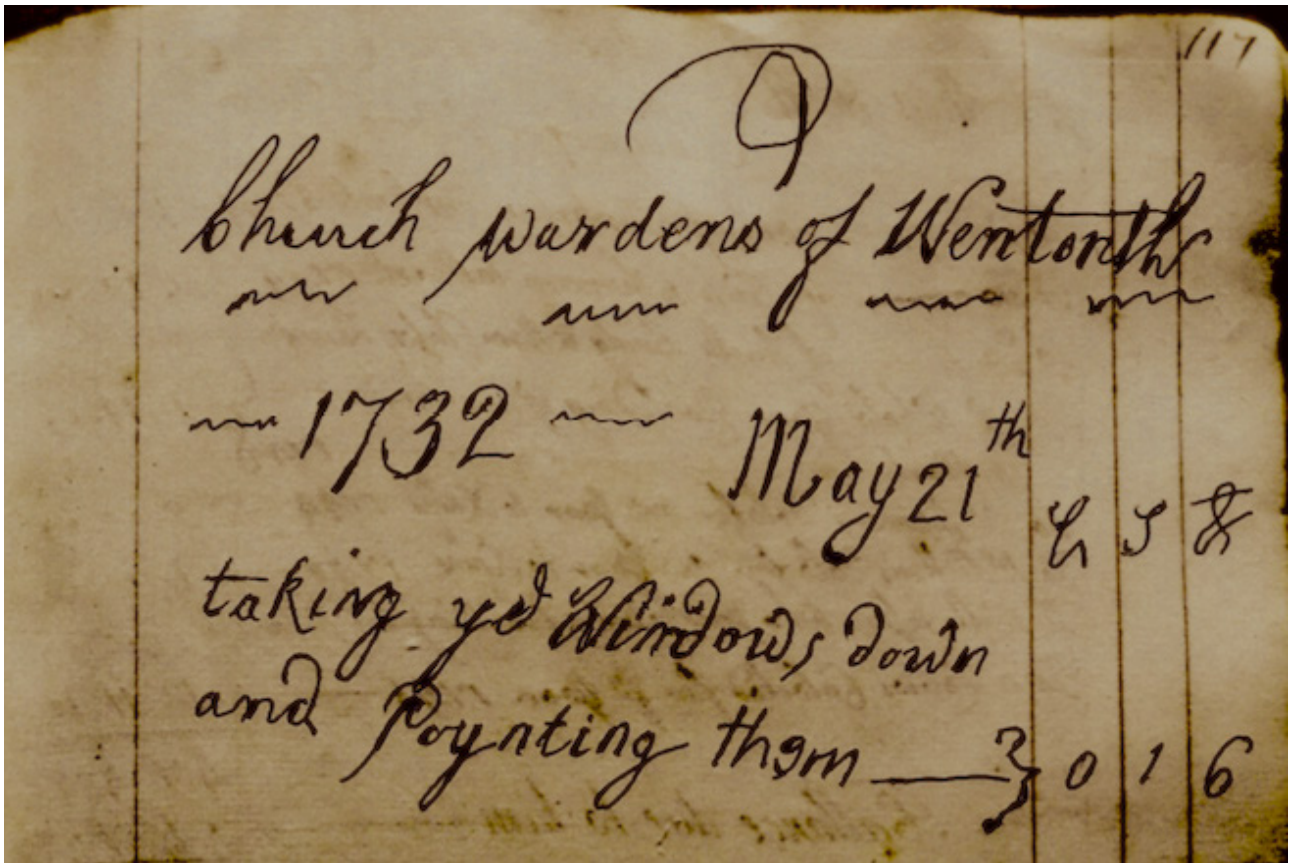

Figure 2 - An account from the 18th century for 'taking the windows down and poynting them'. © Fourniss & Sons

The identification of the joint between masonry blocks as the focal area is a change in emphasis of architectural practice that started in the 17th century. Previously, as considered in Technical Paper 31, building technology had recognised seamless harled or plastered architecture as the means of moderating water penetration and the consequential effects of decay, as well as enabling areas of carved stonework to be highlighted. Ongoing scientific research supports the hypothesis that the joint area in traditional masonry is the most vulnerable area relative to water penetration. It is important that an assessment is made of both the authenticity of the materials and practices of the past, as well as the functionality.

4 THE EVOLUTION OF LIME FINISHES

Before examining the styles of pointing in detail, it is necessary to describe the evolution of lime finishes in general, as introduced in Technical Paper 31. The evidence confirms that lime harl, lime plaster and limewash was applied to the majority of martial, domestic and ecclesiastical architecture constructed prior to the late 17th century. For the greater part, this position remains unchanged until the development of lowland urban centres in mid- to late 18th century and is best exemplified by the Edinburgh New Town, where smart new 'clean' buildings of bare stone represented a break with the past. The Scottish Enlightenment fed into all areas of intellectual and social life and architecture is the most outward expression of a cultured life. As the century progressed, regional towns throughout the country began to adopt the same architectural fashion. By the Victorian period, bare stone architecture in all its varied forms was appreciated, not just by the rich, but also by the expanding middle classes in all areas, and this included the Highlands and Islands. The near universal appreciation of bare stone has been referred to as 'Rubblemania' and extends beyond new building work to describe the removal of historic external coatings to expose once covered rubble walls.

The archaeological record for how late medieval and Renaissance buildings were finished is overwhelming: rubble walls contrasted with finely worked, decorative stone masonry features, such as detailed corbels, raised and chamfered margins and classical motifs. Most rubble masonry was covered ny a lime finish of some sort. It is acknowledged here that more research is needed to establish a better understanding of the extent of unifying limewashes at this time, nonetheless, the evidence observed is compelling with examples of limewash covering carved decorative elements and harled rubble.[7] This can be seen in areas of medieval structures which were sheltered from the elements. Good examples survive on the fine masonry at Edzell Castle in Angus (Figure 3), St Clement's Church at Rodel on Harris and Coxton Tower in Morayshire as described in Technical Paper 31. While the survival of full mortar finishes was common as noted in Technical Paper 31, survival of limewash on carved work is less obvious. However, the evidence revealed that limewash in all contexts is the last of many layers of defence and in a harsh environment, particularly when the outer coat is not maintained, can be swiftly eroded. Erosion of that thin outer layer is likely to have led to bias in the evidence. In many cases, this removal was deliberate. The process of the conscious removal of the harling from St Clement's in the late 19th century is described in Technical Paper 31, leaving a very different building both in how it looks and how it performs.

Figure 3 - Edzell Castle, limewash still adhering on a sheltered corner. This corner of the building represents a significant survival of an original coating. Image: Tom Addyman.

Another example of survey bias is when the underlying stone type is soft sandstone. It was noted that when lime finishes grade away, weathering also sloughs away the outer surface of the stone. In these examples, all the evidence is lost, particularly on windward elevations.

Examples from the survey demonstrate that a tradition of limewashing over the flush finished joint area of masonry continued into the early 20th century. Most survivals are on small vernacular scale buildings, domestic or functional, whose owners did not have the luxury of choice, or where there were no formal custody regimes, or where these buildings were less under the influence of changing tastes.

As a trade, stonemasonry has always been well developed in Scotland, possibly due to the wide availability of workable stone and a demanding climate requiring masonry carved details, as opposed to plaster ones. A feature that may have been overlooked in recent studies is the way in which limewashing can accentuate those skills rather than diminish them. It does so by editing away the variable tonal and colour values of the stone; the very values that many Victorians or advocates of exposed masonry sought to extol. Limewashing leaves only the quality of carving to be seen in the relief and shadow that limewashing creates. The light, form and masonry skills are brought out to the full when those tonal variables are obscured (Figure 4). The architecture and design is presented in a uniform manner and not broken up by, the more random patterns of the underlying rubble. This presentation supports the interpretation of the word ‘pointing’ to mean lining out, which by throwing shadows is able to seek imitation of the ashlar work of a parapet or other area of cut work. In this understanding of the architectural style of the late Middle Ages, there is no rubble masonry to point, in the modern sense of the term, as it is all covered.

Figure 4 - The Great Hall at Stirling Castle; the limewash transforms the architectural appearance of the structure, highlighting the carved elements.

Scotland, like many European countries, used classical motifs in its architecture. The survey made clear that masons in Scotland preferred to execute intricate detail in high quality stone, with general rubble work forming a platform for external lime coatings. Historical written references for building finishes are rare. Nevertheless, extracts from the records of Burgh of Records of Edinburgh, c.1589-1603[8] describe the process of

manipulating workaday materials so that they have the appearance of formality. Here, the guild paid James Workmand for the decorative gilding, marbling and colouring of the external ashlar finishes of Nether Bow, as well as the colouring of the cross.

> *"Item, payit to James Workmand, painter, for gilding of the gret armies at the Nether bow and, for gilting of tua armies quhilk ar to be put up at the West port, and for malbring and cullering of the Nether bow about the armies, and for drawing of alscheller draughtis within the bow, and for cullouring of the cros, in all was agreit at command of the counsaill be Alexander Uddert and Edward Galbrayth 5 li."*

During the survey and analysis, the distinction between a worn full harl and an applied partial cover was difficult to establish. When examining the remains of what was once a full harl, it took time and careful observation to differentiate worn harl from sneck harl pointing. The definition made on the building in Oven Wynd, Kelso (Figure 5), was made by referencing the size of the stones - in this case they were small - and by examining the masonry at the eaves where the survival of the complete cover was more extensive. Dating such work is also difficult, as the practice was so common; for example, the work at Oven Wynd in technical delivery could date from the 16th to the 19th century.

As early as the Roman period, the archaeological record demonstrates that the desire to make ordinary building materials appear formal has been strong. This process can be seen in the lining out of the render at Newhailes House, Edinburgh. This work can be dated to around 1686, when an extension covered up this external elevation, preserving the finish in a basement area (Figure 6).

Figure 5 - Oven Wynd, Kelso. The decayed surface of what was once the typical finish for rubble. The full harl has graded away and it is difficult to differentiate this from an intentional 'sneck harl'.

Figure 6 - Lined out external render at Newhailes House.

An evolution of the lining of plaster found at Newhailes can be seen at Floors Castle in the Scottish Borders. Here, William Adam, working around 1721, finished the rubble areas of the elevations completely with lime render (Figure 7), and ruled the surface with precise horizontal and perpendicular incisions.

Other examples in the survey show versions of this style in varying degrees. Later developments on the style adopted on this building are useful in following the journey of masonry finishes and will be considered in detail in a separate paper. While Floors is recognisably an elite building, the techniques used in its construction essentially remain vernacular. This practice of lining out mortar in modest build work continued even when the use of cement had become commonplace.

A quote from William Adam on Mavisbank in 1727 is revealing in how he regards rubblework, but also how it needs to be covered, so the architecture may be be seen and appreciated:

> *"And though I know your Lop will only doo the walling in Rough work yett I'd have a Belting, Corners, and Cornish with ffrontons done, as that Architecture may be expresst att first view"*

The shift from renders to a more partial wall finish was gradual and not universal. In many rural areas, the practice of harling with lime continued into the 20th century. There is no precise moment when Scotland's architects and people began to favour uncovered stone. Nevertheless, it is possible to detect the origins of the complex social, political, economic and religious influences in Scotland in an increasing predominance of initially ashlar (to achieve the classical ideal), and then unrendered rubble (in the age of Romanticism). That renders were still considered necessary to protect and finish lower cost rubble work on subordinate elevations is seen in a late 18th century building in Stirling, where the principal elevation is well cut, costly ashlar work but the gables are rubble with a protective layer of harl (Figure 8). Harl still adheres to one of the quoins.

Figure 7 - Floors Castle, rubble chased, plastered and lined out in imitation of ashlar work dating from around 1720.

Figure 8 - A late 18th century building in Stirling showing harled rubble on the gable elevation, and more costly uncovered masonry work to the front. Note the harl fragment on the middle quoin.

Narratives in building development and evolution do not always progress in straight lines, and the survey identified some examples of interesting changes in direction. At one of the outbuildings at Craigston Castle, likely to date from the late 18th century, an interesting insight into masonry approaches can be seen (Figure 9). In this case, a careful use of slate in a flush joint, probably meant to be seen, has later been covered in a harl.

Figure 9 - An ancillary building at Craigston constructed with poor quality agglomerate sandstone with decorative slate 'cherry-cocking'. This has been retrospectively harled, which is assumed to be in response to decaying sandstone.

By the later 18th century, high status buildings were increasingly built with uncovered ashlar work and the contrast between new forms of architecture and the preceding style or appearance is most obviously seen between the new and old towns of Edinburgh. It has also been suggested that there was a conscious move away from the previous era.[9] An image from the late 19th century (Figure 10) shows the nature of the buildings in the old town and what remains of the traditional finishes. Those who could afford it were building differently, and even the mid-19th century replacement buildings in the old town featured uncovered rubble and cut work.

What Figure 10 also shows is the change in the appearance of the building, as the sandstone quoins and margins have lost their coverings. In turn, this condition of disrepair became a 'look' or style in itself which is considered later in the paper. As the 19th century progressed, stone continued to be used for construction in Scotland and elsewhere but was increasingly finished without renders or the covering limewash. Obviously, the joint had to still be covered and this was generally with a flush finish and some form of ruling.

Figure 10 - The building described as 'Bible Land', 183-187, Canongate, Edinburgh photographed in the late 19th century.

It is also significant that Scotland has had a tradition of packing out the joint area with 'pinnings' and 'cherry stones' during the build, thus minimising the possible shrinkage of lime mortar. In many instances, the packing was undertaken so that the masonry could receive harl and reduce the time needed for carbonation. This process is seen where the joints have become exposed, as shown in Figure 11, where the harl has been removed.

In areas of Aberdeenshire, sneck harl is commonplace and, where the finish had graded away, the packing of the joint is clear. The survey made clear that, by the late Georgian period, the packing process had taken on a decorative meaning. What was once functional had become 'polite' as the use of harl declined. Figure 12 shows a building in Cullen in Moray which is an example of a packed joint, carefully formed with slate chips and a raised profile.

Figure 11 - Ladder pinning and cherry cocking showing on a building in Cromarty, where the covering harl has been lost.

Figure 12 - Cullen, Moray. An early version of strap pointing with slate pinnings and a raised band of lime to form the joint (1810).

The development of ashlar work and mid-18th century treatment of rubble to resemble ashlar work described earlier seemed to recede and be replaced by uncovered masonry. The stone designs or emblems of the past were carried over into a new epoch with carved Gothic features and simpler Neo-Classical raised margins at corners, doors, and windows, but generally without the masonry finishes that would have defined their medieval predecessors. Again, Floors Castle shows this transition well in a single building. In Figure 13, the left-hand side shows William Adam's work of 1721, discussed above, with the work of William Playfair from the 1840s adjacent; showing the part of the development of masonry finishes and the favouring of uncovered stone. Playfair's work has sought to show the texture lines in the masonry; channels were driven through, but the finish was never covered.

Figure 13 - The work of William Adam from 1721 on the left, with surviving lined out render, and William Playfair's work of the 1840s to the right, chased pointed and lined, but no coverings.

Figure 14 - The south elevation of St John's Episcopal Church, Jedburgh. A 19th century recreation of a pre-reformation church with many architectural details taken from the middle ages, except for the treatment of the masonry surface.

St John's Episcopal Church in Jedburgh is a good example of gothic revival designed by the Architect John Hayward in 1843 with an interior attributed to William Butterfield (Figure 14). In many ways, it is a good copy or interpretation of the pre-reformation churches of Scotland in nearly every detail, but while its architecture replicated the carved details of the Decorated English Gothic style, it took the finish of its external work from the ruins and uncovered stone of its surviving predecessors.

In the 19th century, prosperous regional towns developed, such as Bridge of Allan. In towns like these, the quality of skilled masonry work is very high but stone selection is less obvious and protection of the stone itself was not a priority; it was meant to be seen. Ruling out is often seen to give a degree of formality. Within this framework, ideas of the naturalistic strength and beauty of stone are evident[10]. An example of this trend is where squared, sawn and partially formalized rubble was used for the principal elevations. This was flush finished and ruled out and, commonly, the ruling was more clearly defined by the addition of a whitening of the ruled incision (Figure 15).

Many stones on this type of dwelling are showing signs of stone decay. The consequences of the loss of empirical knowledge about protection and how stone responds to the environment is evident. In Figure 16, the lime mortar remains reasonably robust, but the modest quality exposed stone is already showing signs of deterioration.

Figure 15 - Bridge of Allan. Front elevation is flush finished, ruled out and white lined.

Figure 16 - Bridge of Allan. The weathered surface of bare stone with ruled out Victorian flush finishing, standing proud of the worn surface.

The style of the joint developed over time; a simplified version of the pinned and raised pointing band is seen on later 19th century buildings, especially in the north east of Scotland. The Huntly Arms Hotel has a good surviving example of such a finish, where the pinnings have been dispensed with, but the raised band remains to formalise the joint, yet retaining enough of the look of the masonry units that a flush point would not have given (Figure 17).

While differing styles emerged in the 19th century, in rural areas and many smaller towns, the tradition of covering the stone almost entirely continued into the early 20th century. Such work is often seen on many mid quality local buildings, often on secondary facades, and only the lack of limewash would distinguish the finish from one of an earlier century. This change is well illustrated by a former stable complex in the Borders, where domestic improvements in 1905 built on work from the 1780s. Here, the 18th century work was flush pointed and limewashed, as illustrated in Figure 18, the later work to the domestic buildings built upon this with a flush point but with no wash.

Figure 17: Strap or ribbon pointing in lime mortar, with later cement repairs above.

Figure 18: Weens Stables, Hawick. Above, un-limewashed flush point from 1905 (brown coloured mortar) with earlier 18th century work and limewashed flush pointing surviving below.

The changes in stone covering were not just an evolution of a tradition; by the mid-19th century, it had intellectual sanction. Within the context of what was to become the 'Romantic'[11] movement, stone of all types were respected not only as a building material, but as an architectural expression. The term 'Rubblemania'[12] has been applied to the 19th century fashion for this romantic aesthetic in architecture, where there is an emphasis on the appreciation of bare stone in all its differing forms, one where the colours and textures of stone were understood for their naturalistic beauty and therefore wedded philosophically to ideas of morality and 'truth'[13]. This ethos is demonstrable in the writings of the 19th century art critic and polymath John Ruskin whose influence still underpins this discourse. The language of his canonical work, The Seven Lamps of Architecture (1849) shifts between the godly, 'perfection', 'obedience', 'strength' and 'divine', and the ungodly, 'evil', 'betray', 'gross degradation' and 'vulgar'[14], when comparing the materials and practices of the 'ancients' and more recent work in Venice. Ruskin is forthright in his disapproval of disguising elemental building materials:

> *"But to cover brick with cement, and to divide this cement with joints that it may look like stone, is to tell a falsehood."*[15]

He is equally contemptuous of the process of ruling out lime plastered masonry, in mimicry of larger ashlar blocks:

> *"The true colours of architecture are those of natural stone and I would fain see these taken advantage of to the full."*[16]

All of the above would seem in contrast or criticism to the historic lined out plaster work seen at Newhailes from the 17th century (Figure 5). In this instance, 'cement' indicates lime plaster, but the 'The Lamp of Truth's' message would appear to be one that countenances only a bare stone and, therefore, a 'truthful' paradigm. Decayed masonry and finishes, as seen in Figure 8, began to be taken as an architectural language of their own and were adopted in many repair schemes of the mid and later 20th century. But such loss of coatings was not always natural; art started to imitate life and, since the late 19th century, there has been a programme of removing extant complete lime coats on older or historic structures to expose the underlying masonry. This is described with some entries in Technical Paper 31 and where the Architect Alexander Ross notes on his work at St Clement's in 1885 *"the writer of these notes had the pleasure of having the walls cleaned and repointed".*[17]

This was part of what might be termed 'the antiquarian tradition', which is built upon by the approach taken by the then Ministry of Works. This was happening as there was an increasing appreciation of the ruins in all parts of Scotland and Europe, where repair and consolidation was beginning to be carried out to monuments. Here, to some degree, the principles of 'conserve as found' were applied, and eroded mortar joints re-pointed to give an appearance similar to that of the ruin by retaining the prominence of the open eroded joint. This approach to ruins might be said to have informed works on buildings in use, giving rise to elevations, as shown in Figure 19. The survey found no evidence of this form of masonry treatment from the late 18th to the late 19th centuries.

Figure 19 - 'Bible Land', 183-187, Canongate, Edinburgh, shown here with modern recessed pointing.

During the 19th century, the country estates had become the essential requirement for wealthy industrialists and the landed gentry. However, the Scots baronial buildings of the period were often constructed without an appreciation of the local climate. An example of this would be Kinlochmoidart House, built with soft red sandstone details, infilled with whinstone; a building which suffered water ingress from completion. A little later, Oliver Hill's Cour House in Argyll imported design and detailing ideas from other parts of Britain without appreciating the impacts of wind and rain; this building has also suffered from water ingress issues from early on. Later in the 20th century, a Scottish style of masonry was common which showed in tenement construction, as well as high status buildings. A well-known exponent of this style was Robert Lorimer, whose work, sometimes called 'a robust Scottish style', was used in the Scottish National War Memorial of 1922 (Figure 20). Here, a barrack block was extensively re-worked and a dominant rubble aesthetic with recessed pointing is a key part of the composition. This is a valid finish for Lorimer's architectural style, but its style is its own, not one of an earlier era.

It is significant that, over a period of years, adjacent buildings appear to have been repointed following this style, even though they would not have looked like this when first built. The result of this institutional journey is the eventual appearance of the Governor's House at Edinburgh Castle; a classically inspired domestic building of the 1720s, where the masonry between the windows is now presented as recessed pointing, possibly copying Lorimer's work at the Scottish National War Memorial from nearly 200 years later (Figure 21).

Figure 20 - Recessed pointing, The Scottish National War Memorial, Edinburgh Castle.

Figure 21 - The Governors house at Edinburgh Castle. Recessed pointing.

The survey identified no evidence for the recessed pointing style. It is unclear when this method was first adopted, but it would appear to have started in the mid-20th century, as many examples from buildings in State care (formerly HM Office of Works)[18] show this approach, where a cement and lime-based mortar with a recessed joint was often used. This joint was made to look weathered by brushing or beating the mortar to expose the aggregate. This is also a form of accelerated weathering and would align with the work to maintain the appearance of a monument as a ruin. Once the practice became embedded within the skillset of the state, initially on ruins, it seems to have been picked

up by practitioners within the heritage sector, who took their lead from the organisation who had looked after monuments, as opposed to buildings in use. This pointing style has gained currency in many areas of mortar work; that it is done with lime does not change its effect on the architecture. This mortar style appears to be firmly embedded in the minds of the public as a way of denoting antiquity or history. Figure 22 shows how the application of a certain pointing style, seen on the right-hand side, can significantly change the appearance of an elevation and where it would appear to disregard the existing traditional finish, seen middle and left.

Looking at buildings now, later repair works to older structures with Portland cement repairs can often present a confused aesthetic. Given the ubiquity of the ruled 'slaistered' finishes in many parts of Scotland, it is likely that these repairs are simply continuing to use the same approach with a newer material. This might be the case in a house in Southern Scotland, modernised in 1958, as seen in Figure 23.

Figure 22 - This recently repaired building, using a lime mortar, illustrates well the change in the appearance of an elevation when a certain pointing style on the right is used in preference to what was clearly surviving on the left.

Figure 23 - A traditional type of finish, the flush point, using a more modern material, cement. The style is a fair repair of what was there before, but with a different material.

As the conservation community now recognises the difference in performance and visual appeal between lime and cement mortars, cement repairs can be seen as inaccurate and harmful, justifying their removal. This may, in part, explain why there is a reluctance to repair and reinstate such cement finishes in lime. But while the material may be wrong, the style of its application may be architecturally correct in how the building is presented. The evidence demonstrates that the practice associated with early cement finishes more closely represents the work of the past than what is generally regarded as best practice with most lime mortars. While conservation specifiers and practitioners have turned to lime mortars because they are functionally appropriate, national and regional styles have not been acknowledged.

Many of the older pointing styles seen during the survey were evolutions or degradations of the formal lining out of plaster or the lining out of rubble joints. A judgement must be made as to what is still in the tradition and appropriate in building repair. In the 20th

century, some later styles were viewed with criticism. For example, the architect A.R. Powys writing in the 1920s for the SPAB was forthright about what an appropriate finish for stonemasonry should and should not be. This is seen in his discussion of raised ribbon pointing: *"None of these fanciful finishes are to be recommended on old walls. Putney Church Tower was pointed in this disagreeable way. The sanest finish for a joint is flush or as nearly flush as is possible without spreading a thin film of mortar over irregularities in the stones."*[19] And while this is a defence of early finishes, it does not mean that later styles do not have their place. They do, but it should be based on evidence from the building itself, not universally applied regardless. Also, the visual effects of these styles can often be pronounced. For example, an extension of the strap pointing approach has been taken much further in some cases; Figure 24 shows strap pointing of circular form applied on a building in the Hebrides. It has been delivered with some care and expense, but it would be hard to argue that it is within the traditional idiom of the region and the survey found no historic examples.

As discussed, the desire to focus on the joint in masonry work has become very dominant, even when the evidence of the earlier finish is very clear. This is well summarised by an image of a wall in Stirling, as seen in Figure 25.

Figure 24 - New strap type pointing on a traditional building in the Hebrides. A significant change in the appearance of the building and in a style not previously found.

Figure 25 - A boundary wall in Stirling, probably dating from the early 19th century. The masonry finish on the raised section of the wall illustrates well the ambiguous approach to masonry finishes that this Technical Paper seeks to highlight.

5 PROTECTION OF THE MASONRY AND A CHANGING CLIMATE

Within the conservation sector, lime pointing has been regarded as the primary means of excluding water from historic buildings. In addition to its repair being supported for technical reasons to keep walls dry, it is also for maintaining the appearance of a traditional building. The use of limewash as a protecting layer is often discussed, sometimes on carved elements where it is described as a 'shelter coat'. Its widespread application as reinstating an architectural and presentational form, however, is limited, possibly due to a reluctance to change the appearance of a building or as an extension of the SPAB approach on not taking a building back to a previous period or era.[20] Often, there is evidence for a certain finish when the building was constructed.[21] Moreover, with the current approach to pointing, it has been demonstrated that pointing alone is not always enough. The proceedings of English Heritage's, Damp Towers Conference illustrated how impactful complete lime surface finish was in moderating water penetration.[22] The conference noted the unwillingness of parochial church councils to adopt complete external lime coats, but it also revealed that the recessed lime pointing, in the form that is now often used, does not resist wind driven rain in exposed locations. However effective a traditional flush lime finishing to the joint area may be in the management of water,[23] the most effective way of eliminating stone decay appears to be a complete lime mortar covering.[24] There have been many examples of successful applications, including HES Case Study Number 25, Haa of Sand, where a reinstated quicklime-based render was used, finished with limewash. It may be accepted that the change of a building may not always be desired, but the increasing pressure which buildings are under due to climate change, mainly in the form of greater precipitation in Scotland, will oblige revised approaches to the care of traditional building fabric. In many circumstances, it may be that pointing alone, of whatever style identified in this paper, may not be enough if stonework, especially its carved elements, is to be preserved.

At Floors Castle, the gradual decay of the stone surface can be seen on surfaces from many eras of work. How this important element of the building is to be looked after raises some interesting questions beyond the scope of this Technical Paper. Climate change predictions indicate that there will be more rain,[25] which will play upon already weathered and stressed surfaces. The scientific and academic evidence supports the facts that water, often driven by wind,[26] salts and temperature exchanges are the key motors of the breakdown of stone in Scotland. This will increase weathering of masonry surfaces and oblige a range of measures, if loss of fabric is to be prevented.

It is known that limewash does moderate water penetration and manage evaporation more effectively because it is capillary active.[27] A more complex technical discussion will have to be addressed in the coming years about buildings, where decay is already present and where even those traditional flush finishes are inadequate. Climate change adaptation[28] applies to all structures, protected or otherwise, which form the greater substance of historic buildings in Scotland. Detailing and other options are described in the HES Short Guide 'Climate Change Adaptation for Traditional Buildings'.

6 SURVEY OBSERVATIONS

The survey of the masonry finishes, aligning with the work on historic renders presented in Technical Paper 31, has allowed a general narrative to be made on the approaches to stone coverings and joint finishes. For the practitioner, such as the Architect, Surveyor or Contractor, it is helpful to set out the standard or common pointing styles that were identified. Some finishes were more or less universal and some styles were much more regional in disposition, reflecting construction methodologies for a variety of stone types. The styles below are set out to give a summary of what was found. They do not claim to be exhaustive, but it can allow an overview of how most pointing was delivered. Feedback and new examples are welcome. The paragraphs below describe these basic typologies, and Table 1 gives a visual summary of the common types found with short notes.

The flush finishing of mortar joints in Scotland seems to have been a universal process. The sneck harl is the most common finish for rubble work and probably the one with the longest use. This finish links to evidence from Technical Paper 31, where rendered finishes were found to be predominant. A new finding of the survey is that many renders and joint coverings appear to have been applied as part of the building process, referred to as 'harl as you go' in Technical Paper 31. This level of detail is often hard to determine, but examples were noted, most clearly in the degraded mortar at the boundary wall of Airthrey Castle (No 073), where the building and joint covering were done together. This finding can inform considerations on mortar performance and specification for repairs.

Where a thin render finishes and thin sneck harl starts may be more a matter of weathering and interpretation than of intent. A sneck harl implies thrown material and a flush point implies trowel work, but the effect today is similar, especially if covered with multiple layers of limewash of which the former warehouse in Strathpeffer (No 056) is a good example. Agricultural buildings may have continued with traditional approaches for longer and this can be seen in the use of modern white painting of some steadings today in south west Scotland. What appears to be a good survival of a flush point and original limewash is seen at the steading at Coshogle (No 038) and at the bothy close by (No 037), both good survivors in exposed locations and show well how many buildings looked in the early 19th century. More commonly, the limewash has either washed off or been consciously removed. Later on, the flush point may have been left without limewash. This can be seen at Church Street, Cromarty (No 008). In this case, modern repointing work has not followed the historic work, giving a very different look to one end of the wall. Where flush point and limewash has been maintained in new work, the original intent or effect can be seen, such as at the Lodge Cottage at Cormack Wood (No 057). It could be said that this has become a conservation default in approaches to traditional masonry.

In some cases, the uncovered stone is given a rectangular appearance by the 'geometric' sneck harling process, as found at The Miller's House (No 062) and Mid Deeside Church (No 113). Both buildings are interesting and distinguished as a result.

There are examples in all parts of Scotland where sneck harl is either 'squared' or ruled. An example of this is the Lodge House at Scatwell House (No 097), where the

horizontal ruling is aligned to the quoins. The application of ruled pointing can overlay previous work. The Cottage at Dowally (No 027) shows this progression from covered limewashed masonry to uncovered rubble with lined joints.

Where only the joint was filled, the mortar was given an impressed line horizontally or vertically to give some degree of visual formality. The work at the Holy Trinity Church in Bridge of Allan (No 069) is a good example. Sometimes, it is done with less care and this is often associated with a later repair or removal of render from rubble, as is seen at Coneyhill Road (No 031), where it replaced a conventional a full harl. How this should be replicated if encountered, would be a matter for discussion.

In many parts of Scotland, joints were packed in various ways, giving ladder pinning or cherry cocking of the joint. In some cases, this was simply careful work to pack out the joint which was subsequently covered. In other buildings, it was part of a planned visual presentation and was never covered. Perhaps the most distinctive approach is the slate pinned ribbon joints, often seen in the north east of Scotland, at The Square in Cullen (No 021), where the survival of a raised packed joint is as remarkable as its craft.

Figure 25 - A 19th century terrace in Kirkby Stephen. Flush pointing with traces of lining out.

Several examples of raised ribbon finishing without pinnings were identified in varying locations, such as the boundary wall at Haughton House, Alford (No 061). This seems to have been a legitimate and relatively common style in Scotland from the mid-19th century, especially in areas with harder stone such as granite. Later repairs at Alford were not so well delivered and gave a less subtle appearance. Later work of this type, badly copying earlier forms, can give damaging associations.

During the survey, it was evident that many buildings or complexes of buildings had hierarchies of masonry finishes. This is apparent to a degree from the 18th century onwards, but more clearly seen on mid to late 19th century examples. The red sandstone villa at Castle Street, Fortrose, (No 107) has sawn coursed rubble to the front elevation and lined flush pointed rubble to the gables and rear. This gives an indication of where fashion or preference dominated, with more traditional, possibly lower cost,

practices of finishing masonry being used on subordinate elevations, with newer more complex finishes on main or front elevations. Even relatively late buildings of the 19th century still preserve craft traditions where the ambitions of the client or architect were not so dominant. The survey demonstrated that this was a common occurrence as a hierarchy of masonry finishes was found repeatedly in the survey.

While the focus of this paper is Scotland's varied pointing tradition, the survey was briefly extended south of the Border to ascertain whether similar regional variations could be detected. The evidence was compelling, with examples from Cumbria in the north west and Teesside in the north east. An example from Kirkby Stephen (Figure 25) shows a flush point on a principal elevation ruled out much as in Scotland. The gable end of the same property has an unlined sneck harl as also found in Scotland. In all of the English examples, a full flush ample cover was observed, with extensive use of ruling out.

The table of pointing styles below (Table 1) endeavours to summarise the pointing finishes found in the survey and give a point of reference. The styles of joint finish are loosely chronological, with finishes No 1 to 6 being the earlier finishes, moving through to lined rubble pointing (No 15) being a somewhat evolved finish, likely to be the result of the removal of render.

7 LIST OF POINTING STYLES

No	Image	Description
1		Mortar pressed back to the face during construction or 'point as you go'. Sometimes horizontally lined out. Often has an unfinished appearance and common on agricultural buildings and secondary elevations.
2		Flush finish with remains of limewash. In many parts of Scotland, this was common on stables, farm buildings and dwellings, where a harl was not used.
3		Flush finish, similar to No 2, with ruling out and limewash.
4		Sneck harl. A harl is thrown over the joints, covering the pinnings or snecks. In this case, the lime has weathered back, exposing the aggregate. Common in most parts of Scotland for dwellings and farm structures.

5		Sneck harl horizontally ruled out. The harl is fairly degraded; this is a second part of the construction process.
6		Squared sneck harl. A harl is thrown over the joints, covering the pinnings or snecks, but formalisation is achieved by covering the stones with a rectangular board.
7		Sneck harl or plaster with horizontal and vertical lining in imitation of ashlar. A relatively high-status finish.
8		Cherry cocked flush finish using pieces of basalt. Some weathering back is evident in this case; likely to date from the 1820s.

9		Flush pointing and cherry cocked with slate pieces, giving the same definition as ruling out.
10		Raised ribbon point with horizontal and vertical banding; slate cherry cocks in the joint. A more formal way of defining the joint. This is in Cullen, Moray, from 1810.
11		Ribbon finish, where a flush lime finish is applied to the joint and any pinnings, followed by two ruled horizontal and perpendicular parallel lines. The sides of the lines are teased away, leaving a semi-polished, upstanding ribbon joint. This is Huntly Arms, Inverurie, c 1860.
12		Sawn squared stone work with ruling out. Once the bedding mortar had become firm, the joint was flush finished and ruled out. Later, limewash or white lead was used to highlight the formal area of the joint. This was done without any attempt to colour the background.

13		Flush pointing to the plane of the stone but smoothed on the upper and lower side to form a convex form in the mortar. This is a common finish on squared coursed rubble with narrow joints; often seen in the south of Scotland.
14		Flush finish, either as original bedding mortar or later repair, vertically and horizontally lined out. There are traces of limewash on the masonry in this example, suggesting this may be a later repoint.
15		Flush finish with informal horizontal lining out; often vertical lining is found as well. Commonly noted as later work following removal of harl.
16		Ashlar work; pointing pressed back and smoothed with a central line in the pointing. This type of work is found in many ashlar and coursed rubble, characteristic of the late 19th century, and common in many parts of Scotland.

8 CONCLUSION

Lime mortar in building conservation practice is widely accepted as the appropriate material for masonry repairs because it is functionally appropriate and authentic. There is guidance directing users and specifiers on what the best materials and conditions are to produce a long lasting and capillary active material. However, there has not been a review of the styles of finishing the masonry joint directing users to the importance of maintaining the style and finish of traditional Scottish lime pointing. The various means of protecting and decorating the joint area of masonry blocks is distinctive and, in most cases, responds to a different climate to the rest of the UK.

This work has assembled examples of pointing styles and sought to align them to a period and how that fits in the evolution of architecture in Scotland. It brings together examples and comments, so choices of pointing styles are informed, rather than based on assumed knowledge.

Some styles are limited to certain parts of Scotland and are linked to the nature of the masonry and geology, but many approaches to the covering of the masonry joint are common to all parts of the country. The flush finish, lined out or plain, seemed to be the most common. Evidence emerged of the flush finish being formalised with some form of lining out, and various versions of this were noted. More decorative finishes, such as variations of strap pointing, were identified, which were earlier than thought. Some modern finishes are not entirely new, but are evolutions of a technique that have ended up being different from the original.

Also noted were hierarchies of pointing style or finish, both on buildings and within a series of buildings. Many mid-19th century properties surveyed presented a formal principal elevation and pointing style with simpler treatments on gables and subordinate areas. This often extended to outbuildings and steadings.

Changes in the approach to the treatment of masonry surfaces has been considered, as well as how that has evolved into what might be considered a modern pointing style. While this is not wrong as such, it should not be considered an authentic interpretation.

Addressing climate change and its effects on buildings will be an important focus for the conservation sector and this will mean the adaptation of traditional and historic buildings to reflect changed precipitation and weather patterns. The results of surveys for TP 31 and this paper show how common various masonry and joint coverings were and how they contributed to conservation of the masonry and building. Generally, more protection will be needed, where the architecture permits, and a full appreciation of traditional finishes and their re-instatement will be an important consideration in climate change adaptation.

There must be full appreciation of the architectural role of the masonry finish, and clients and those specifying work need to assess the significance of the wall finishes, so that an appropriate repair can be delivered. A default modern type of pointing may not be enough to ensure the continuation of the intended appearance, as well as being less technically suited to increased rainfall. The distinctive character of a traditional mortar

finish should be regarded in the same way as the texture of a traditionally slated roof. In repair schemes, analysis of the stone is now accepted practice to ensure compatibility and the mortar is likewise analysed, but its actual physical finish and style should be given the same attention.

There are indications that evidence is disregarded in favour of contemporary lime mortar practice. Removing extant mortars from historic buildings takes away archaeological evidence for their finishing. Every time this process is repeated, the volume of the evidence diminishes, making accurate future repairs less achievable. The practice of wall finishing with a more universal style of consolidated masonry joints edits the observed regional variations and the intangible values of the craftspeople who undertook such work, as well as the aspirations of those who commissioned it.

The desirability of removing inappropriate or non-traditional finishes can often result in a loss to a building's authenticity. This is because it may result in a change to the appearance or regional characteristics the building had when originally constructed. It is, therefore, important for conservation professionals and homeowners alike to take an inquisitive approach when undertaking building work and follow the historic evidence which, as the survey has shown, can often be seen on the building.

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