



Donald Insall Associates
Chartered Architects and Historic Building Consultants

The Octagon Room

The Octagon Room is the largest room in the building and is a fine example of 18th-century architecture. It was designed by Sir Christopher Wren and is a masterpiece of Baroque design. The room is characterized by its large, ornate chandelier, its classical archway, and its large window. The walls are made of brick, with some areas showing peeling plaster. The floor is made of black and white marble tiles in a checkered pattern. The room is a fine example of the work of Sir Christopher Wren and is a masterpiece of Baroque design.

Review 2018

Contents

Making Good, Making Better	2	The Craft of the Glassmaker	24
In the Hands of Geology Wentworth Woodhouse	7	Medieval Meets Modern The Encaustic Tiles of the Palace of Westminster	28
A Kind of Shangri-La Streets of Westminster and Newport	12	Living Looms Rescuing Kidderminster's industry	33
Craftsmanship Continues Orleans House Octagon	17	Peter Carey (1951 – 2018)	36
Conserving 'Pleasing Decay' The Bristol Colonnade, Portmeirion	21	News in Brief	38

Foreword

Tony Barton, Chairman



While 60 years may not be a significant time span for most buildings and places in our care, it is a noteworthy stretch for an architectural practice.

Donald Insall Associates reaches its 60th birthday in 2018, still growing and yet, paradoxically, becoming younger. We continue to increase in number across the UK, as we welcome more and more young colleagues into all of our studios.

As with the care of a historic site, so the continued vitality of our amazing organisation requires the focused and careful attention of us all. One aspect of this constant enhancement of our capabilities is our in-house training regime, designed to pass on skills, expertise and ethos from one generation to another. Embracing and learning about new initiatives, the regime is designed to offer an even better service to our clients, founded on traditional values while benefitting from academic research, and relevant new technology.

The increased investment in improving our practice-wide capabilities has, in our 60th year, been achieved in tandem with our purchase of all the remaining shares in our company. We are now fully-owned by our workforce and all colleagues have a stake in this ownership through our Employee Ownership Trust, sharing profits and being actively involved in the business plan. The process of employee ownership was started some 25 years ago by Sir Donald Insall and our Company Secretary, Simon Charrington, as a means of succession; however, it is this generation that has seen the concept reach its conclusion.

I hope that you see some of both elements – the passing on of technical expertise and an expression of our employee ownership ethos – as you enjoy this review, skilfully woven together by our editors Hannah Parham, Jessica Holland and Renée O'Drobinak.

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Front cover image:

View into the Octagon from the gallery, by Kaner Olette Architects, Orleans House Gallery, Twickenham. Photo © Morley Von Sternberg.

On this page:

Detail of spiral staircase designed by Donald Insall Associates at Temperate House, Royal Botanic Gardens, Kew, 2018. Photo © Gareth Gardner.

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Right: Splitting Westmorland Slate by hand at Elterwater Quarry, 2018. Photo © Damian Griffiths.

Above: Worn Encaustic Tiles at the Palace of Westminster, 2016. Photo © Adam Watroski/UK Parliament.

'To conserve means to preserve and enhance.'

Making good is what we do when we repair buildings. Conservation architects make good the defects which have arisen through weathering, decay, wear and ill-considered alterations. But is that all? Nearly all our projects also incorporate such enhancements as are necessary to enable sustained and continuing beneficial use. Many, indeed most, projects will include both themes; it is only for those structures which are unconstrained by the need to accommodate continuing human activity – the monument and the tomb – that we can be satisfied with simply making good.

In our 60th anniversary year, we are taking the opportunity to review current projects in light of what we have done in earlier years, to show how improving the buildings and places on which we work is an integral part of what we do. To conserve means to preserve and enhance. The opportunity to enhance, or make better, can take many forms, as demonstrated by the articles in this year's Review, across a wide spectrum of materials and sites, from the tile to the street.

Roof coverings, slates and stone tiles are the subject of *Caroline Drake's* essay. A recurring consideration

for the Practice is the difficulty in securing adequate supplies of roofing materials, such as Westmorland green slates for **Wentworth Woodhouse**, where we are currently appointed as conservation architects, and Collyweston stone tiles for **King's and Trinity Colleges at Cambridge**, where we have been busy since the 1960s. Historically, the use of such materials outside the localities where they were quarried was restricted by difficulties in transport, but now is mainly constrained by planning and commercial restrictions on extraction. Despite these difficulties, we have been able to drive the renewal of the many acres of slate roof at Wentworth Woodhouse through careful forward planning, and the Collyweston quarry has re-opened. The latter allows us to implement a more authentic, indeed better, restoration at King's College than our earlier work at Trinity, where we used Cotswold stone tiles. In so far as we are able, by creating a demand for historically correct materials, we can ensure their better availability for future projects.

The possibilities for urban renewal certainly include improvements of many kinds, and these are illustrated in contrasting projects, namely 1970s

Carnaby Street in central London, and our present-day work in Newport, South Wales. Architect Iona Gibson's Carnaby Street paving in orange, yellow and black vinyl was considered 'wildly exciting' at the time. Disappointingly, the wheel of fashion has turned and some years ago the vinyl, by then worn out, was replaced with another, more chaste, design. This bears an interesting comparison with the work the Practice has been engaged in at the Newport location. *Jessica Holland* describes how Heritage Lottery Fund support has been provided for the restoration of the **Market Arcade**, specifically including the retention of the 1960s and 1970s work, such as the terrazzo paving, mosaic tiles and hardwood joinery. Our assessment of the value of the site supports the retention of later alterations they add interest and are in sound condition. Our commitment to sustainability demands that we keep features of good quality, where these create a better environment.

Plaster rarely receives its due share of the limelight. This may be because modern architects ignore its possibilities and use it in the most boring way possible – as a simple flat surface to conceal the

underlying structure. *Ayaka Takaki* explains how the application of craftsmanship, through three generations of the Joy family, shows us the capacity of the material to be moulded, enriched and decorated to create marvellous and enjoyable (pun intended) interiors. Insall worked with A. G. Joy and Son in our post-fire restoration of **Windsor Castle** in the 1990s, and is delighted to have met the company again at **Orleans House** near Twickenham. The Octagon has been brought back from being a 'good enough' space for local functions to its full baroque splendour. The long collaboration of the Orleans House architect James Gibbs (1682-1754) with the stuccatori Artari and Bagutti was highly productive, and some of the finer nuances of repair and redecoration are examined. Gold-coloured paint is banished; all that glitters is truly gold, applied by the expert hands of Hare and Humphreys. In contrast with many of our other projects, the lesson here is one about the limitations of industrial production as compared to diligent research and superlative craftsmanship. Some skills, notably plastering, provide opportunities for expression, which contemporary architecture cannot match.



Above, left: Orleans House
Octagon, detail, 2018.
Photo © Richard Chivers.

Above, right: Wentworth
Woodhouse wall detail, 2018.
Photo © Damian Griffiths.

Portmeirion is an architectural caprice par excellence. How better could one use salvaged architectural fragments than in the creation of a fantasy Italian hill town! And where better to put it than in the shadow of the Blaenau slate quarries which provided so much of the wealth needed to build it. *Elinor Gray-Williams* shares her experience of navigating a satisfactory reconciliation between the retention and replacement of structural defects, while retaining the patina of pleasing decay. Just as Wales is enriched by the diversity of its landscapes and architectural fantasies, so is our Practice by the opportunity to research and thus better understand the reality behind the illusion.

The manufacture of glass in bigger and stronger sheets to allow structures of ever-increasing lightness and delicacy is akin to magic. Medieval peasants were instructed in the scriptures by looking at bright stained glass windows, and 17th-century poets could, instead, look through clear glass to espy heaven. *Jeremy Trotter* shows how developing technologies of hand-made crown, cylinder and plate, as well as industrially



'...a profession in which, like music, so much of the outside world has an interest and shares as a hobby: we enjoy the support of informed clients as a direct consequence.'

manufactured sheet and float glass have enabled the construction of ever-more-spectacular buildings. In the 1970s we worked on the decoratively domed 1818 conservatory at **Alton Towers**, designed by Robert Abraham using small panes which were exploited to allow the creation of curved forms from flat glass. Decimus Burton's 1859 **Temperate House** at Kew used the best technology of its time and long rectangular glass sheets, but nevertheless their greenish tint reduced the ability of the plants within to thrive. In support of the Royal Botanic Society's scientific aims, we have taken the opportunity, in our recently completed major restoration, to fit modern clear float glass which will improve the quality of the daylight inside the Temperate House. Now that the excitement of the grand opening by Sir David Attenborough on 3 May 2018 is over, we look forward to seeing how the plants respond to their restored home. We remain alert to opportunities to make better the buildings on which we work, while retaining their value.

Victoria Perry and Edward Lewis look at the history of the use of clay in construction, from prehistoric



Above: Donald Insall
Associates training day at
Kelmarsh Hall, 2018.
Photo © Damian Griffiths.

mud to industrial production, before focusing on the manufacture of encaustic tiles, adopted by Pugin for use in the **Palace of Westminster**, where we have been working on a sequence of projects for over half the Practice's life – since 1985. They show how, as well as being beautiful and durable, advances in manufacturing the tiles allow for improvements in the social conditions of those making them. There are opportunities in modern technology which should be applied to the heritage sector to provide better working and living conditions.

Our work keeps alive not just trades, but also methods of industrial manufacture. Nowhere is this better demonstrated than in Kidderminster where, as *Peter Riddington* writes, our long-term carpet consultants David Luckham and Mo Mant are working to ensure the continued future of specialised **Axminster looms**. The project will allow the accurate restoration of historic interiors with the correct floor coverings. Without the looms, and the skills to operate them, this authenticity would not be possible. An application for Heritage

Lottery Funding is being developed. As with the natural roofing slates and tiles cited earlier, our work is critical to the survival of trades and skills which underpin the heritage economy. **The Royal Albert Hall** is another example project where, in the 2000s, and again working with David and Mo, we procured the largest single-repeat carpet in the world to cover the floor. We'd like to be confident that we could do so again.

We at Insall are very fortunate to work in a profession in which, like music, so much of the outside world has an interest and shares as a hobby: as a direct consequence of this we enjoy the support of informed clients. Nevertheless, the context in which we work continues to change, and as times change, Insall will change with them. Our other projects and activities demonstrate our continuing commitment to ensuring that the historic sites on which we work remain as Living Buildings.

Making good is the starting point for what we do; our real ambition is for making better.



The landscape at Elterwater Quarry. Photo © Damian Griffiths.

In the Hands of Geology Wentworth Woodhouse

Caroline Drake



Above:
The sea route from Cumbria to Wentworth Woodhouse in the 18th century.

Following cheers at the Chancellor’s announcement of £7.6m in funding, Insall has returned to Wentworth Woodhouse in South Yorkshire to design and oversee two phases of conservation repairs. The earliest parts of the house date from c. 1630 and were built for the first Earl of Strafford. They are incorporated into the rear of the west front – a Baroque building of 1725-1735 built for Strafford’s great, great nephew, Thomas Wentworth, Lord Malton and later the first Marquess of Rockingham. In 1734 construction started on the east front to the designs of Henry Flitcroft. Stone faced, chastely Palladian and rigidly symmetrical, its lower wings were altered and heightened by John Carr from 1782-1784. Measuring 187 metres, it is claimed that the impressive east front is the longest domestic façade in England.

Our task has been making good of the vast expanse of Westmorland slate roofs, which cover 3,250 square metres and are in urgent need of repair, not least because they protect the building’s exceptional interior decoration. The roofs are low in pitch, designed to be invisible from the ground, and

set behind a parapet. On a wet day, buckets collect rainwater within the dampened interiors, which are inadequately protected by tarpaulin, introduced to buy some time until full repairs can be undertaken.

Working closely with the new owners – The Wentworth Woodhouse Preservation Trust – and Historic England, Insall has described a first phase of roof repairs, now on site with Aura Conservation. A second more substantial phase of work will start on site soon, including improving the thermal performance of the roofs. Alongside repairs, proposals include the designing of alterations to improve maintenance access of roofs and fire separation measures to help reduce the spread of fire.

Previous interventions introduced mineral wool insulation at the ceiling level of the ‘cold roof’ type without provision for ventilation. This appears to have resulted in condensation leading to timber decay. Our analysis concluded that condensation has contributed to the failure of the slating due to the deterioration of the oak pegs that are fixed to the slates. Consequently, insulation at ceiling level will



Images above: Photos taken during the design team's visit to Elterwater Quarry, 2018. Photos © Damian Griffiths.

be removed to prevent further damage to the historic structure and wood fibre board insulation introduced to provide a ventilated 'warm roof'. Breathability and hygroscopic insulation have been selected over impermeable insulation in order to buffer humidity levels and avoid reliance on barriers to control moisture; the potential failure of barriers and consequential trapping of moisture would present significant risk to the historic fabric. The combination of modern materials and traditional detailing is one example of 'making better' at Wentworth.

Supporting tradition

Sourcing traditional materials has become increasingly difficult; as natural resources diminish, methods of extraction and production evolve, and fashions change. But this is a challenge worth rising to in support of traditional crafts and industries, which constitute a tangible and unique aspect of our heritage. The Westmorland slate originally used at Wentworth was quarried from the Lake District beds laid down approximately 350 million years ago. There is no evidence of when quarrying and working of slate first began in the UK, but records exist from medieval

times which refer to a slate quarry being worked at Sadgill in Longsleddale, in 1283; records also suggest that some working of blue slate was taking place in Kirkby-in-Furness, in the 1400s. By the 17th century, records document an industry that was clearly already well developed.

Westmorland slate is well known for its green appearance, which generally distinguishes it from the more common blue grey Welsh slate; although Welsh slate is available in a green colour, it is currently only quarried for aggregate, not roofing. From the outset we knew that the procurement of Westmorland slate would be testing, particularly for the programme, because of its scarcity. Early discussions with Burlington Stone – one of the few quarries still producing Westmorland slate to the quantities that would be required – revealed that the project team would need to overcome and manage the long lead-in time of this unique material, which is available only in small batches.

This is a common issue we face as conservation architects. Similar difficulties arose during the re-roofing of Great Court, Trinity College, Cambridge, which was undertaken by Insall in the 1990s.



Above: Leading slate by cart and sled from Saddle Stone [or Old Man] Slate Quarry. Taken by John W. Knipe of Coniston (c. 1890s). Reproduced by kind permission of The Ruskin Museum, Coniston.

The roofs were covered with Northamptonshire Collyweston slate, which was no longer being mined. New slates therefore had to be sourced, as second-hand material was available in insufficient quantities. After discussion with English Heritage (now Historic England), it was agreed that slates from Cotswold quarries would be appropriate. Initially slate was sourced from Filkins, but later, when this quarry had closed, Naunton slate was used for other roofs.

Our work in Cambridge continues, and with it the challenges of matching the architectural achievements of the past in such a historic city. Happily the Collyweston Quarry has recently re-opened and Insall has negotiated a supply from its first production to cover the roof of 19th-century Bodley's Court at King's College. Orders have had to be placed over 15 months in advance of work on site in order to achieve sufficient quantity. Production of the stone traditionally relies on cold winters and a freeze-thaw cycle to laminate the stone 'log'. Milder winters have required the development of a new technique, and so the stone is now being placed in a deepfreeze. This has sped up production, which can progress throughout the year and not just the

'Architects at Insall have visited the quarry, held the slate in our hands and had a go at 'riving' ourselves'

winter months. Modern technology and traditional materials are by no means incompatible.

In contrast, the light-green slate band of Burlington Stone's Elterwater Quarry, in the heart of the Langdale Valley, has been worked since the 1600s and now operates as an open pit. The unique strength of the Westmorland slate produced there can be attributed to its derivation from volcanic ash, which distinguishes it from Welsh slate, which is derived from clay. It is, therefore, an appropriate geological and historical match with the slates seen at Wentworth Woodhouse.

Over the centuries, quarrymen have developed an understanding of how the slate bands in the Lake District run and how to split or 'rive' the slate to make and grade roof slates, maximising use of this valuable resource. Skilled quarrymen would 'rive' up to two tonnes of roof slates every day. Architects at Insall have visited the quarry, held the slate in our hands, and had a go at 'riving' ourselves; we honour the valiant effort and craft involved in quarrying and producing the slates in such quantities and to such a high standard.



*The great East front of
Wentworth Woodhouse
during roof repairs, 2018.
Photo © Damian Griffiths.*

'In the same way that roofers use slates in diminishing courses to maximise yield we have specified random widths, striking a balance between best practices outlined in the British Standards with current quarry output to employ the same spirit of resourceful building craft.'

But how were the slates transported from the Lake District to Wentworth over the period of construction commencing in 1734?

Difficult passage

Slate from Cumbria was often shipped to markets in the south of England. Dressed slate was taken in horse-drawn carts from quarries to a quay at the north end of Coniston Water. Transport from the dressing floor at the quarry would be in a cart or a sledge. Local farmers often supplemented their income by carting goods like this. Slate would be transferred to a large rowing boat to be taken down to a quay at High Nibthwaite at the southern tip of Coniston Water. Today, countless slate fragments can be found at the aforementioned location, testament to this arduous journey. From there, the slate would be taken to the port at Greenodd. Small ships would collect the slate at Greenodd and sail southwards through the Irish Sea, around Lands' End and along the south coast. The Wentworth Woodhouse slate might have taken this route, sailing the North sea to Humberside. Such a journey would have been long, time consuming and, when French

warships were disrupting English vessels along the south coast, dangerous.

Although only 85 miles away as the crow flies, Wentworth Woodhouse was separated from Greenodd by the Pennines. The alternative land route, by pack pony or by coastal sloop, was also fraught with difficulty. Not so with the modern lorries which brought the slate to Wentworth Woodhouse earlier this year.

While transportation is now much improved, we patiently await, in the hands of geology, quarrying and riving of the slate at Elterwater Quarry. Delivery dates have been agreed in batches according to the location and size of the slates, which has informed the sequencing of the works; a first delivery arrived in early May 2018, with subsequent batches to follow later in the year. The largest 20-inch slates for the Riding School, which posed the greatest uncertainty according to the availability of block sizes, are eagerly anticipated from December 2018 onwards. An overall lead-in period of 11 months has been accommodated within the contract period.

In the same way that roofers use slates in diminishing courses to maximise yield, we have

specified random widths, striking a balance between best practices outlined in the British Standards and current quarry output to employ the same spirit of resourceful building craft. Slate is a finite resource and salvaged slates will be saved for re-use on other areas of the roofs.

Make your mark

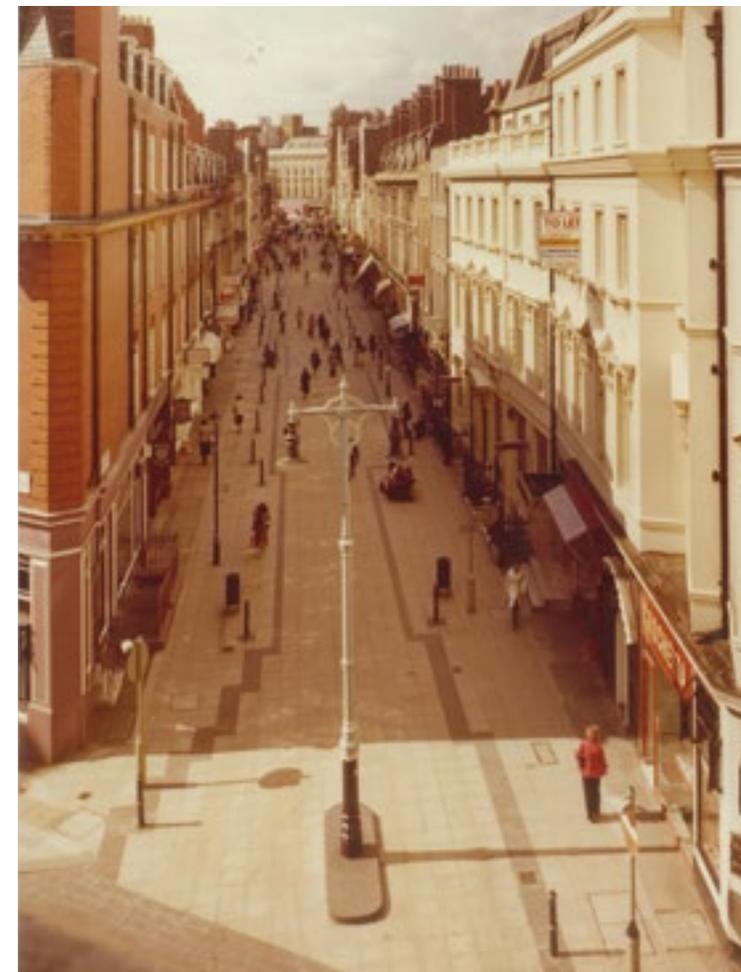
The skilled craftspeople who have worked at Wentworth Woodhouse have been secretly leaving their mark on this historic building for more than 200 years. The Trust invites supporters to leave their own legacy by sponsoring a slate destined for the roof in order to help raise funds. It estimates that up to £200 million will be needed to restore the house, and carry on the tradition. The Make Your Mark appeal asks for a minimum donation of £50 and slates will be etched with personal messages by Paul Furniss, a local contractor from Wentworth, who has worked over a number of years at the house.

If you would like to sponsor a slate and support the repair work to protect Wentworth Woodhouse visit <http://www.wentworthwoodhouse.org.uk>

A Kind of Shangri-La

Streets of Westminster and Newport

Jessica Holland



Far left: The Carnaby Street pedestrianisation project, completed by Donald Insall Associates in 1973.

Left: South Molton Street, circa 1979. Photo © Colin Westwood.

Above: Laying of vinyl tiles at Carnaby Street in progress.

Retail architecture is, by nature, fleeting. Changing styles and trends ensure a rapid turnover of shopfronts, often resulting in high streets, arcades and malls that are fragmented in design, presenting a unique series of conservation questions. In today's digital age, local high streets and town centres face further challenges. As shopping habits continue to shift, various planning initiatives – such as Historic England's new 'Heritage Action Zones' and Canadian planner Brent Toderian's 'sticky streets' – are seeking to revitalise run-down areas and to adapt to changing consumer trends.

Heritage-led planning initiatives have been used to great effect by Insall throughout our 60-year history, perhaps most notably in two bold pedestrianisation schemes commissioned by Westminster City Council: South Molton Street and Carnaby Street respectively. Undertaken in the 1970s, the projects were headed by architect Iona Gibson and sought to enhance the existing spirit of both places.

The difference between the two locations was – and continues to be – marked. The psychedelia of iconic Carnaby Street, described as 'wildly exciting' by Iona, contrasts with the smart Mayfair townhouses of South Molton Street.

At Carnaby Street, Insall undertook a condition survey of buildings and advised Westminster City Council on the pedestrianisation of Carnaby Street, Foubert's Place, Ganton Street and the small open courts leading off the main route. A bold, geometric design of nylon-based paving, 'Verynyl', was created; the black and white 'zebra crossing' chequers on a background of yellow and orange enliven the street scene and complement the shopfronts, as shown in the sun-drenched photos of the 1970s. At the 1973 opening, Alderman Sandford described the new precinct as 'a kind of Shangri-La'.

At South Molton Street, which followed in 1976-77, a 'quiet' approach was taken, responding to the attractive buildings of mainly the late Georgian period. Initial concerns from shopkeepers regarding diminishing trade due to the proposed pedestrianisation were unfounded and the change provided a shopping route directly from Bond Street Underground Station unhindered by traffic. Simple concrete paving with bands of dark bricks were selected to give an impression of a widened and lightened street, in order to create a pleasant place to linger and shop.

Arcade of flowers

Insall's work in heritage-led high street regeneration continues today, with a recent appointment as project architect for the revitalisation of the Market Arcade in Newport, South Wales – the city's oldest surviving shopping arcade. Built in 1869, the arcade was at the heart of town-centre Victorian growth when the city was a thriving commercial centre and port. The arcade was reconstructed and enlarged in c.1905 to form its current arrangement of 15 retail units laid out over 2 storeys, with a connecting gantry on the first floor which passes over the arcade. This later remodelling is likely to have been undertaken by Habershon and Fawcner, an architectural practice with local offices, which had designed numerous public buildings in the area.

The Market Arcade remained in good condition for over a century, contributing to the vibrancy of the city centre. It became known locally as the 'arcade of flowers' as the small units without shop windows that opened directly onto the arcade were popular with florists. From the late 1960s it fell into decline as the focus of commercial activity shifted southwards with the development of a new shopping centre. The

units struggled to adapt. In recognition, perhaps, of its continued decline, the arcade was designated as a Grade II listed building in 2000.

Despite its protected status, piecemeal unauthorised work has been undertaken over an extended period, thus leading to a significant loss of historic fabric. A lack of maintenance due to poor access and a lack of clarity regarding maintenance responsibilities amongst the multiple tenants and owners have resulted in the failure of roof coverings and rainwater goods, which has caused internal decay from water ingress. The poor overall condition has contributed to the arcade's decline in use. Today, like many town centre streets, the Market Arcade has high vacancy rates and suffers from pest infestation and frequent anti-social behaviour. Despite the difficulties, there remains a core of stalwart tenants and owners who can easily imagine the reinvigorated arcade again becoming a shopping destination.

The project's overarching objective is to redefine the arcade as a sustainable commercial attraction within the city centre conservation area, supporting strategic development by Newport City Council and



This spread: Market Arcade, Newport, 2018. Photos © Damian Griffiths.

'...the design team was also keen to retain architectural evidence of the evolution of the arcade which has experienced a series of 'heydays' to date – latterly in the 1960s and '70s, which is evidenced by two late 1960s shopfronts.'

site and the role of the Market Arcade in the growth of Newport from the mid-19th century.

A condition survey undertaken by Insall has revealed that the condition of the shopfronts is relatively good, although there is considerable variation in the style and significance of each. The shopfronts are framed by surrounds, formed of pilasters between each shopfront and a sloping fascia plus stepped cornice above – a 'goalpost' arrangement which runs through the length of the arcade. This continuous fascia and cornice gives a rhythm to the arcade and unites the various shopfronts and windows that have individual styles, thus reflecting their use.

Material wealth

In consultation with the Newport City Council Conservation and Planning Officers, Insall undertook an assessment of the shopfronts, defining the impact of each as negative, neutral or positive, to help inform proposals. Unsurprisingly, the elements of early-20th-century joinery were considered precious. However, the design team was also keen to retain architectural evidence of the evolution of the arcade, which has experienced a series of 'heydays' to date – latterly in

the 1960s and 1970s, as evidenced by two late 1960s shopfronts. The use of terrazzo, mosaic tile and hardwood joinery in these shopfronts is comparable to the historic arcade detailing and materials, though applied in a modern manner.

On the first floor, the arcade façades are clad in unusual 3mm-thick glass 'tiles'. The tiles are applied to a fine tolerance, with delicate quadrant tiles to the arrises of openings, and splayed tiles to arched window heads. The tiles are a key feature of the site, their reflective quality adding interest at a high level and bringing light into the arcade; this important feature will be reinstated on a like-for-like basis.

The combination of mechanical and hand-made processes used to manufacture and install the tiles illustrates the rapidly changing era in which they were conceived and made. Site investigations have revealed that the glass has a studded backing which had been mechanically applied before the hand-cut tiles were pressed onto rendered brickwork. Research is currently being undertaken in association with the Welsh School of Architectural

Glass to determine the best available match for the off-white glass.

Analysis of earlier decoration schemes by Hare and Humphreys revealed uniformity of finishes, with varnished hardwood and grained softwood on the shopfronts and fascia, as well as off-white ironwork and white tiles on the first floor, thus reflecting Edwardian taste that is reminiscent of the Burlington Arcade in London. The decoration scheme presents an elegant yet neutral backdrop for the joyful variety of shopfront styles that will be conserved and, in some instances, replicated using existing details as a basis for new designs. The Market Arcade community looks forward to the reinvigoration of its own Shangri-La, right in the centre of Newport.

The Market Arcade Townscape Heritage Scheme has just received news of its successful Round 2 application for £1.1 million in funding from the Heritage Lottery Fund (HLF) as part of the Townscape Heritage Programme.

local organisations, such as the Newport Business Improvement District. In order to achieve this, we immediately noted that the Market Arcade needed to highlight its historic features and inherent character.

The project aims to restore some of the architectural detail that has been lost where remnants of fabric allow for informed restoration; the project also seeks to conserve and repair further details that are at risk or have been compromised by inappropriate alterations. The proposals will re-connect owners, traders and the wider community with the historical significance of the



Orleans House Octagon, 2018.
Photo © Morley Von Sternberg.

Craftsmanship Continues Orleans House Octagon

Ayaka Takaki

'This concludes several decades of our involvement with the Orleans House Gallery, from initially providing conservation advice and advising on minor repairs to specifying major restoration works.'

The Orleans House Gallery and the Orleans Octagon lie in the west part of the grounds of the original Orleans House. The six-acre site includes both natural woodland and a parkland setting close to the river, on the stretch of the Thames between Twickenham and Richmond. Described by one-time owner Duc d'Orleans as his 'peaceful house in Old Twick', the unique charm of Orleans House Gallery sets it apart from other sites as an idyllic landscape in miniature, now providing both an events venue and a very special teaching and cultural environment. The Gallery's vision to share its heritage with the community continues a tradition of hospitality and entertainment fostered by previous owners and occupants.

The 'Transforming Orleans House' project has been completed this year, and is re-opening to the public after a 17-month refurbishment. This concludes several decades of Insall involvement with the Orleans House Gallery, from initially providing conservation advice and advising on minor repairs, to overseeing major restoration works. Architects Donald Insall and John Dangerfield, both of whom live locally, have forged a close attachment to the building and the restoration of the Octagon has been of significant importance to the Practice.

The project saw a conservation-led approach to consolidating the Gallery as a whole in order to provide an improved interpretation and level access throughout. Using the restored Octagon as a centrepiece, a new north wing gallery housing gallery rooms, a shop and accessible WC facilities have been designed by Kaner Olette Architects and built

by Quinn London. The Gallery now has an ongoing programme of volunteer training, family activities and educational visits continuing into 2019.

A masterpiece of English Baroque

The house took its name from Louis Phillipe Duc d'Orleans (1773-1850), later the King of France, who lived there from 1815 until 1817 during his exile from France.

The main house was originally built in 1710 for James Johnston, Joint Secretary of State for Scotland under William III, by John James (c1672-1746). Having retired from political life, Johnston set about building a home for himself in Twickenham, devoting considerable effort to gardening and to lavish entertaining. With the arrival of George I in Britain, Johnston resolved to build a pavilion separate from the house to host his guests, which included members of the Royal Family. The architect he chose was James Gibbs (1682-1754), arguably the leading architect of the 1720s, whose design was considerably more flamboyant than that of the main house, acting as a strong counterpoint to the main house's Palladian austerity.

James Gibbs trained in Rome under Carlo Fontana, a pupil of Gian Lorenzo Bernini, and was one of the few architects of the era to have first-hand experience of the Baroque. The Octagon, often described as a masterpiece of English Baroque, was designed to connect with its natural setting; indeed, its entrance faced the river directly and was provided with large



Opposite page, left:
The installation of the restored chandelier.

Opposite page, top right: Decoration trials. Photo © Thomas Erskine.

Opposite page, bottom left: The gilding process.

Right: Ceiling detail with chandelier. Photo © Morley Von Sternberg.

windows that allowed the light and reflections to fully penetrate. Set away from the main house, with its own wine cellar beneath and with attached service buildings which included kitchens, scullery and laundry, it provided a retreat from the daily life of the house. The interior surfaces were decorated with fine free-flowing interior plasterwork executed by the renowned stuccatori Giuseppe Artari and Giovanni Bagutti, whose work can also be seen at St Martin-in-the-Fields, Clandon Park, and Castle Howard.

The last private owner of the house was Nellie Ionides (1883-1962), who bequeathed the buildings and her art collection to the Borough of Twickenham on her death. It was her timely intervention in the 1920s that prevented the destruction of the Octagon when the main house was pulled down to allow river gravel extraction. Her art collection is now on permanent display in the new galleries, with a special interpretation room designed by ZMMA.

Craftsmanship continues

The Octagon is the jewel of Orleans House Gallery. Its delicate beauty uplifts the spirit. The conservation and repair of the interior presented important opportunities for the modern specialist conservators and craftspeople, as it required extensive repairs to the original plasterwork by

Artari and Bagutti, redecoration including oil gilding, repairs to the marble floor and joinery, as well as the installation of a new water-gilded chandelier.

During the works, we were able to observe the magnificent interior in detail from the scaffolding; we could see the high quality of the sculptures and the true proportions of the plaster enrichment figures. Interestingly, we noted that the hidden rears of the sculptures had been left unfinished, invisible from the floor level.

The project reconnected us with old contacts and introduced us to new craftsmen — all passionate and highly skilled individuals. Donald Insall Associates has now worked with three generations of craftspeople from John Joy Plasterers (formerly AG Joy and Son). At Orleans House, Jon Joy carried out the intricate repairs to the plasterwork, including sculptures. We worked with Jon and his father Bunny at Windsor Castle in the 1990s on the post-fire restoration project. At Orleans House Gallery, we worked with Jon and his son Tom, their example highlighting the benefits of the passing of skills and knowledge through the generations.

The interior repair and decoration were carried out by Hare and Humphreys. Extensive paint analysis carried out by Jane Davies revealed 10 previous

decorative schemes, the most recent being gold-coloured paint over the oil gilding. The pigments for the paints we used were hand-mixed and adjusted to suit the findings of the analysis during the full height decoration trials. The gilding process was painstaking, requiring a dust-free environment.

The focal point of the restoration was recreating a chandelier removed from the Octagon in 1969. The water-gilded wooden chandelier was made by Hare and Humphreys and their team of specialist carvers and gilders in the workshop in Stoke Newington, London. We drew our proposal based on two surviving photographs published in Country Life in 1944 and the workshop produced a full-size and expanded drawing, as well as samples of carvings and gilding prior to manufacture. The workshop visit provided perfect and unique learning opportunities for all involved as well as the stakeholders and local residents from Orleans House Gallery during the production of the chandelier.

We made some fascinating discoveries on site; for example, we uncovered the original Portland stone flags beneath the marble floors, the design of the 19th-century marble above matching precisely the Portland below. This was one of the enhancements carried out for the French Royal Family during their exile, with the coloured marble closely matching the

floors at Chantilly. Although we had to record and recover the Portland stone flags due to time and cost constraints, the whole project team bonded over the discovery of the history of the building.

The large original sash window frame uncovered during the opening of the previously-blocked window opening was kept intact and reunited with a new sash window which it now holds, all repaired by skilled joiners.

We enjoy sharing knowledge and exchanging new ideas: CPD sessions held at our offices, led by craftspeople, are always useful and particularly well received when the subject involves traditional techniques such as gilding, plastering, joinery, and where subjects are of immediate relevance.

The quality of craftsmanship at Orleans House is clear to see in the restored building. The less tangible but equally important result of the project is that rare skills have been passed down to another generation. Conservation projects rescue historic buildings, and also support highly specialised crafts, which have the potential to enrich the whole built environment.



The Bristol Colonnade at Portmeirion, 2017. Photo © John Hammond.

Conserving 'Pleasing Decay'

The Bristol Colonnade, Portmeirion

Elinor Gray-Williams

'This includes — do we make good, or do we remedy previous errors to make better?'

We are lucky in Wales to live in a country so totally diverse. The country's modern buildings and landscapes are typically defined by the heroic achievements of people through industry. These contrast with gentler expressions of human endeavour, and nowhere so distinctively as amid the slate mining landscape of Blaenau Ffestiniog where, in the 20th century, the magical Italianate village of Portmeirion was created.

Portmeirion was built by the architect Clough Williams-Ellis (known to his peers and followers as 'Clough') between 1925 and 1975, before his death in 1978. Clough intended to show how a beautiful site could be developed without spoiling it. He created a landscape of anachronisms: the whole site was an exercise in historic restoration, with many buildings destined for demolition elsewhere dismantled and reconstructed here. The Bristol Colonnade is one of the highlights, towering proud in the Italianate landscape above the main Piazza.

The Colonnade was originally built in 1760 by James Bridges, and stood at the front of a Bristol bathhouse. It was damaged by wartime bombs and had fallen into disrepair when, in 1959, Clough carefully measured and recorded it, following which he disassembled and moved each piece of delicate masonry, transporting them so that they could be re-built in North Wales by his master mason, Mr William Davies. Clough recalls: 'First to last, in Bristol as well as at Portmeirion, it was almost entirely a matter of high masonry craft, for, having determined its site and fixed its levels, there was little more for me to do but look on, approve and very much admire'.

Donald Insall Associates was invited to inspect the Colonnade following concerns over the condition of the masonry, which is compromised in some areas of the underside of the structure, and at the front.

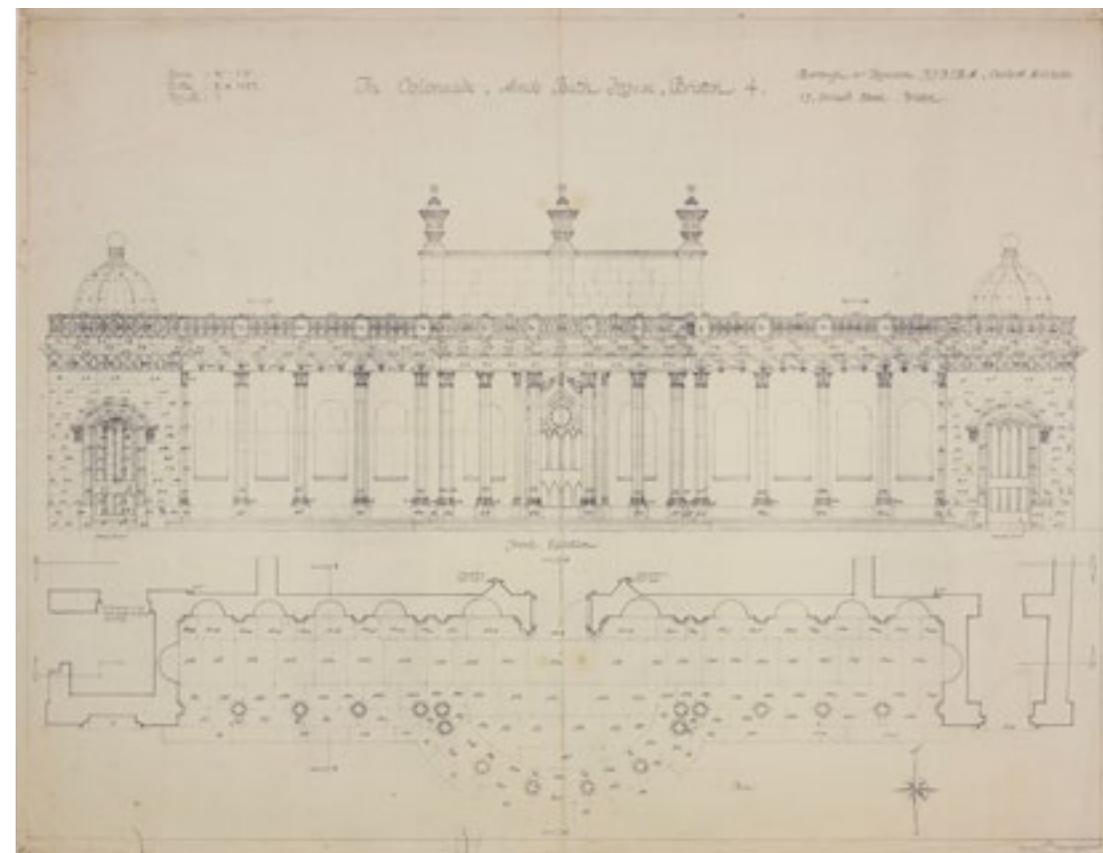
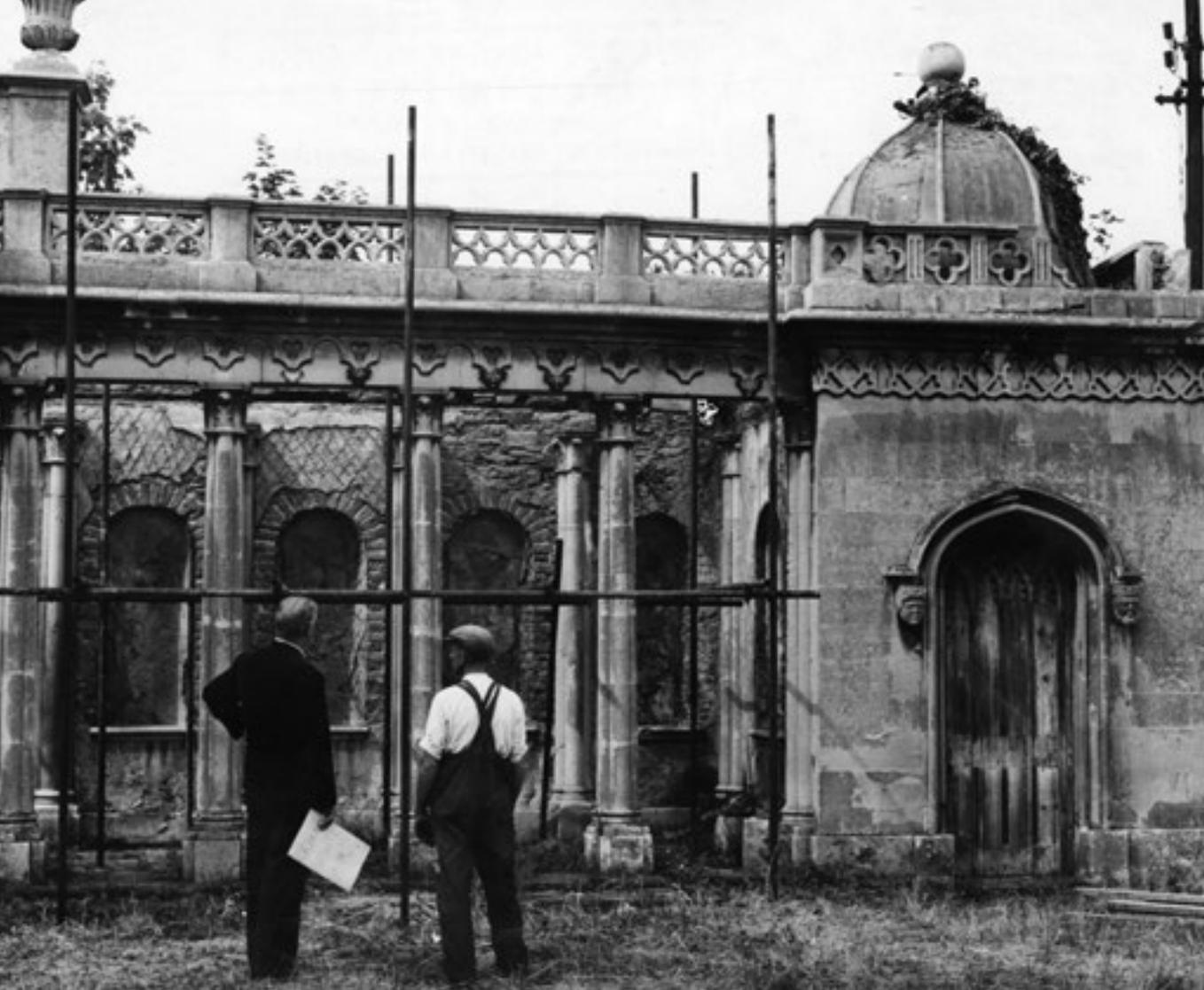
At present we are unsure if the damage to the front was caused by pollution when the building was in Bristol, or another factor. Historic photos of the building in its original location can help us make some assumptions, but it has been difficult to assess.

We have been trialling repair and cleaning methods to establish an appropriate conservation approach. Trials have shown that gentle and non-destructive methods of cleaning can be used, undertaken largely by hand. Similarly, some of the pointing mortar is hard, and damaging to the stonework: again, trials have been undertaken to determine the extent to which this mortar can be removed and renewed without damaging the masonry.

Ornaments of time

There are interesting considerations for the next stage of the Colonnade's conservation. The authenticity of the structure (it was moved from Bristol), and of Portmeirion itself, is multi-layered. It is not easy to define the final approach, as this in turn demands assessment of some complex criteria, namely significance, construction methods and surface appearance. We have taken time to look at and to assess what is special about the identity of the structure and site. The trials have certainly proven conclusive as to how we can go about repairing the structure, but there are many questions to be asked before we proceed. These questions include that of: do we make good, or do we remedy previous errors to make better?

Clough was a master of illusion, delight and deception, but there are problems with how the structure was originally pieced together that mean we have to decide whether to implement corrective measures to remedy the defect, or accept that there will always be ongoing difficulties.



'When Donald Insall was writing *The Care of Old Buildings in the 1970s*, he met Clough Williams-Ellis and thought him to be 'a delightful one-off'.'

Opposite page: Clough Williams-Ellis inspecting the Bristol Colonnade c. 1957-8. Image courtesy of Portmeirion Village.

Above: Drawing of the Bristol Colonnade by Burrough and Hannam of Bristol. Image © RIBA.

One such example, and forming one of the more significant aspects of the trialling stage, is to investigate the substrate materials of the floor structure. Limited and non-destructive investigation has shown that the substrate has no damp-proof membrane within the concrete plank construction. Consequently, water penetrates through cracks within the concrete deck and causes decay to the stonework below.

We seek to avoid blindly imposing a conservation approach that regards 'authenticity' as forever retaining the original defective fabric, but removing the deck would prove far too destructive.

The likelihood is that we will need to devise a strategy to control this water ingress by other means, and patch-and-repair any consequential damage on a regular basis to stave off long-term failure. There are also interesting considerations in relation to how we repair 'pleasing decay'.

There is obvious damp penetration through the back wall of the structure and this is causing deterioration of the vibrant paint finishes, something we need to remedy. Yet the romance of the antiquated, worn and damp surfaces was attractive to Clough, and he often specified two shades of paint for his colour schemes – dark at the bottom and lighter at the top – to mimic a 'historic' look. The porous stone of the Colonnade is in immediate contact with the penetrating damp behind, and from the leaking deck above. While we seek to fix this problem, we must also respect the significance of Clough's aesthetic approach.

Conservation can never be an exact science and it is important to assess what is special about any building or setting before agreeing a way forward. There are major complexities in considering appropriate approaches for repairs at Portmeirion. This is particularly so in relation to structures that have been lifted out of their original context and re-defined as architectural follies, often with elements of 'pleasing decay' intended as a significant factor

for the aesthetic. These complexities are then compounded further still when said structures have been made into such personal landscapes with a bold character and background as infused by Clough.

Romantic landscapes

When considering repairs, we refer to other projects where we have experience of working with other romantic landscapes with similar complexities.

Our work at the Gothic Folly at Wimpole in Cambridgeshire is instructive. Here, we reinstated lost detail of the 18th-century structure based on archival drawings and archaeological analysis. Restoration might seem a perverse approach to a 'designed ruin', but it halted the process of decay which had gone long beyond 'pleasing'. Our work has led to greater appreciation of the original picturesque design, which sits in a landscape by Capability Brown. The judges who awarded the project a Europa Nostra award noted that the 'clever restoration' had 'inspire[d] thought about the nature of conservation'.

Our work to repair the fabric of the Pin Mill at Bodnant Gardens is another good example, as this is another restored and re-built historic building in a fine landscape. At Bodnant, we took a pragmatic approach to retaining the Pin Mill's identity, again considering that it is one of the signature elements within the National Trust's gardens in Conwy.

Similarly, at Portmeirion, we will first and foremost consider the work which is necessary to improve the defect-prone constructional errors made by Clough; otherwise, we compromise the longevity of the structures, and ultimately diminish the delight they bring to visitors. We will, in parallel, seek also to protect the attraction of 'pleasing decay' where we can, and where it forms a significant factor for the aesthetic, as intended by the architect.

When Donald Insall was writing *The Care of Old Buildings in the 1970s*, he met Clough Williams-Ellis and thought him to be 'a delightful one-off'. Clough might not be considered an exemplar of conservation architecture, but, as Donald put it to me, 'that did not matter'.



Left: View of the Grand Entrance to the Crystal Palace, Hyde Park London, 1851 / Alamy.

Above: The conservatory at Alton Towers, repaired by Donald Insall Associates in 1982.

'It is an unusual material in that the cultural and technological context of society at the time of its manufacture is inherent in its properties.'

From a domestic skylight to the great stained glass windows of medieval cathedrals, glass is a material that has wide universality. It provides a view to the outside and allows light to enter, yet it also protects the inhabitant from the weather. When combined with colour, it can offer visual delight.

Contemporary expectations are for glass to be invisible: a 'non-material' which eliminates the boundary between inside and out, while maintaining internal environmental conditions. Defects are to be excluded. This is achieved using scientifically-advanced manufacturing techniques that allow glass to be perfectly flat, free of flaws, and able to resist the strongest effects of UV light. The ubiquitous example of this are the vast expanses of glass fixed to the towers of the world's cities.

The cultural and technological context at the time of its manufacturing is inherent in the properties of glass. Whereas the design and shape of the clay brick have stayed relatively static throughout history, the development of glass as a material has evolved in parallel with technological progress. In the earliest period of glassmaking, glass was a product of the craftsperson.

The craft of glass

Just as a brick is of a size which means that it can be held in the human hand, under the crown process of glass manufacturing in the 18th century, the size of a glass pane was limited by the tools available and the abilities of the glassmaker. In what was a slow and labour-intensive process, the glassmaker would spin a molten bulb of glass into a flattened disc, from which a small pane would be cut. This typically limited the pane size to 16 by 10 inches. Glass was therefore an expensive material, and unsurprisingly its use was limited to small windows characterised by heavy timber glazing bars that were required to support the panes. Glassmaking was an arduous manual process, but it was a craft in which the glassmaker was fully immersed. The glass was not perfect; it had bubbles, distortions, and an uneven texture. These defects, however, ensured that the piece of glass was unique, and had a character of its own.

The crown process was swiftly usurped as technological advancements allowed for both pane size and quality to increase. The cylinder process had been in use in Europe since the 13th century, but it was Robert Chance of Chance Brothers glassmakers in Birmingham who improved the manufacturing

process in the early 19th century. The company's technological innovations allowed for larger panes to be produced both in greater quantities, and at a consistent quality. Concurrent with this were improvements in ironwork, which allowed for larger openings free of structural support.

The Chance Brothers were also pioneers of the plate glass technique, which can be seen as the precursor to modern float glass. One particular application of plate glass was at Windsor Castle, where the panes date from the 1840s and are set into large timber sash frames. Following the extensive fire in 1992, Donald Insall Associates carried out meticulous repairs to those windows that were damaged.

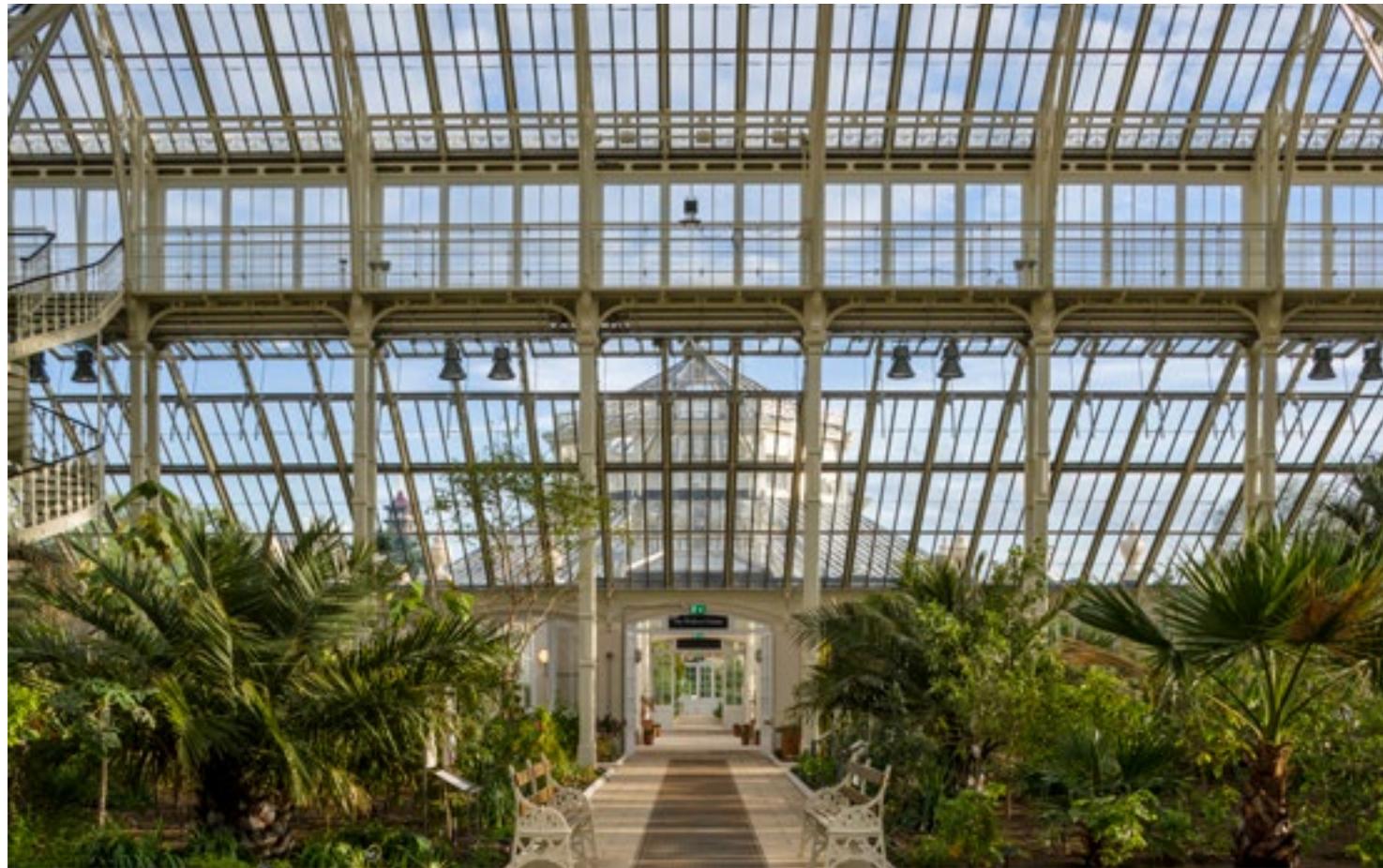
At Kew Palace, we took a similarly sensitive approach to repairs. Since 2014, the fanlights and sash windows have been carefully repaired in situ. Remarkably, we managed to replace decayed timber sections with new timber without having to remove the existing fragile glass.

Industrial Revolution

The rapid industrialisation of Europe during the Industrial Revolution saw steam power,

mechanisation, and the standardisation of building components take hold as a philosophy of the construction industry. Refinements in production processes ensured that glass could be produced more cheaply, faster, and to more consistent tolerances than ever before. Glass was embraced as an essential building material. The Victorians were quick to seize upon the benefits of glass construction, employing it in large botanical glasshouses. Significant examples include the Temperate House at Kew (1862, Decimus Burton), and the conservatory at Alton Towers (1814, Robert Abrahams), for which Donald Insall Associates won a Civic Trust Award in 1982. Comprising seven domes, the conservatory was rescued from total dereliction and completely re-glazed.

A similar approach to repairs was taken at Temperate House, which re-opened after a five-year refurbishment project in 2018. The original glass panes had a green tint, which was thought to protect the living collection of plants from UV light. In 1879, a severe hailstorm shattered almost 39,000 panes of original glass, and the tinted glass was replaced. The replacement glass was lost again during WWII. Therefore, at the outset of this



Opposite page, top: The Coombe Cliff Conservatory at Horniman Museum, London, after works by Insall. Photo © Thomas Erskine.

Opposite page, bottom: Detail of the fish scale roof at the Coombe Cliff Conservatory. Photo © Thomas Erskine.

Left: The completed Temperate House, Royal Botanic Gardens, Kew. Photo © Gareth Gardner.

most recent refurbishment project, the building retained no original glass. The project sought to replace the existing glass in the same style, with curved bottom edges and a one-inch overlap to minimise water wicking. One change made to the glass specification was the addition of toughened glass adjacent to publicly accessible areas, to meet modern statutory regulations.

One of the most significant uses of glass in a public building was in 1851, when Joseph Paxton appropriated the engineering principles behind botanical glasshouses in his design of the Great Exhibition Hall in Hyde Park. Paxton's design – subsequently dubbed the Crystal Palace – was the first public building that employed glass as the primary building material, and its design and construction embodied the philosophy of the Industrial Revolution. Paxton pioneered the use of standardised components that were fabricated off-site in workshops and foundries, and transported to London via the burgeoning railway network. All components were mass produced, using technologically-advanced production methods that ensured rapid fabrication at a low cost and consistent quality.

The Crystal Palace was of a modular construction, from the glass panes to the structural iron members. The Chance Brothers supplied almost 300,000 panes of glass – a third of the country's output at the time. Loaded onto trains in Birmingham, the panes were swiftly transported to Euston, for eventual delivery to Hyde Park. The fulfilment of this order was only possible because of the advanced manufacturing methods that were available at the time. Because the Crystal Palace had been assembled with screws and bolts in a modular manner, it could be rapidly dismantled when the Exhibition closed. All components were reclaimed, arguably making the Crystal Palace one of the first truly sustainable buildings. Still functioning as a private company today, the Chance Brothers supplied glass for our work at the Temperate House and the Palace of Westminster.

Glass works

From the latter half of the 19th century, the cylinder glass process gave way to the hand-drawn glass process, which in turn was superseded in the 20th century by the float glass technique. Every successive

process reduced defects in the panes, and increased production speed and efficiency. Modern glass lacks visual imperfections and is a manifestation of modern technological achievements.

It is important to recognise the importance of rare survivals of historic glass and the craft of the glassmaker that these embody, as well as the potential for new glass to improve the performance of historic buildings and to make them work for modern life.

At the Horniman Museum and Gardens, Insall repaired the Coombe Cliff Conservatory. This was built in 1894, dismantled in 1981, and subsequently re-built on the current Horniman Museum site in the same decade. The Conservatory fortunately retained most of its original features, such as the roof which is formed of glazed fish scales. In 2016, Insall undertook essential repairs to the structure, providing new heating and a 'Victoriana'-style tiled floor. This provided the Museum with a secure all-seasons venue for private hire and functions.

All materials age with time. The surface of the material might develop a patina, or it may suffer more severe corrosion, decay, cracking, or fissures.

These defects imbue character into the material; the defects are a visual expression that time has passed. Glass, however, appears to be relatively resistant to gradual decay. Usually the timber glazing bar or the putty deteriorates first, leaving the glass pane intact but in a vulnerable state. Although it is a hard material, it is also delicate; the slightest impact can cause a crack that weakens the whole pane, or more likely lead to instant destruction. Other materials can withstand damage and retain at least some semblance of their original form. Glass, however, is fragile, and susceptible to shattering beyond repair in a way that other materials are not. Historic glass is a rarity, deeply imbued with character as much as a worn stone step or a bowed timber rafter; as such, it is a material that must be protected and celebrated.

Medieval Meets Modern the Encaustic Tiles of the Palace of Westminster

Victoria Perry and Edward Lewis



Andrew Midwinter, mason and DBR Ltd foreman. Involved in the project since the start, he says he has lost count of how many tiles he has laid. Photo © Adam Watrobski/UK Parliament.

With heavy use and exposure, even the most durable materials start to wear. The patina of time can be as interesting as the original finish, but deterioration can get to the point where any aesthetic value or meaning is obliterated. This presents a particular problem in buildings or objects where the significance of the design is greater than that of the fabric, such as the 19th-century encaustic tile floors in the Palace of Westminster.

Encaustic tile floors are found within the important sequence of spaces forming the entrance to the Victorian palace. These run from Westminster Hall, via St Stephen's Hall, and via the circulation routes to and from the Central Lobby to the House of Commons and the House of Lords. The tiles are also used to floor the St Mary Undercroft Chapel, including the Members' Entrance and the Peers' Entrance, as well as for fireplace surrounds and on stairs. The floor designs form an integral part of the overall decorative scheme conceived by Charles Barry in the 1840s. The original encaustic tiles were created by Herbert Minton in the 1840s and laid from 1847. The artwork of each encaustic tile floor is specific to each space. Aside from considerable wear and tear, particularly to the floors, much of

the interior survives as Barry intended, and has architectural and historic significance overall which transcends that of the floors alone.

By the turn of the 21st century, many of the tiles were nearing the end of their practical life, despite large areas having been replaced with often inferior quality tiles throughout the 20th century. In addition to our ongoing work on the Palace Courtyards and Westminster Hall, Donald Insall Associates is leading a project to repair these unique floors.

Fired Earth

Encaustic tiles are made from clay, which is one of the most time-honoured and widely used building materials on earth. However, the ubiquity of clay-based building materials such as bricks and tiles can sometimes blind us to the extraordinary physical and chemical qualities of this natural resource. Clays are naturally-occurring hydrous aluminium phyllosilicate minerals with feldspars and varying amounts of other material formed by the chemical weathering of rocks over millions of years. The minerals in clay trap water within their structure and form a flexible, partially water-

resistant mass which becomes firm when dry. As a major constituent of many earth materials, clay forms the basis of traditional building materials including cob, daub, and earth floors, as well as the artificial linings of lakes, ponds and dams in a technique known as puddling.

Donald Insall Associates has worked on many projects where clay is used in its natural state, including the restoration of the lakes at Plumpton Rocks near Harrogate, wattle and daub panels at the Staircase House Museum in Stockport, and earth structures in the Middle East. Yet it is when dry clay objects are 'fired' – heated to a very high temperature – that the material magic really occurs: the molecular structures of the minerals change; any entrapped water (that remains after air drying to avoid rapid shrinking and failure) is released; the clay undergoes chemical changes including vitrification; it becomes ceramic.

Bricks and tiles, including clay roofing tiles and 'quarry' floor tiles, are perhaps the most familiar ceramic building materials. Brick and tile making in Britain are generally, as one would expect in a modern industrialised society, highly automated processes where much of the manual work of

traditional production has been replaced by mechanisation. However, for repair and conservation projects, where short runs are needed, including those at the Palace of Westminster, tiles are still, or can be, made by hand.

The Potteries

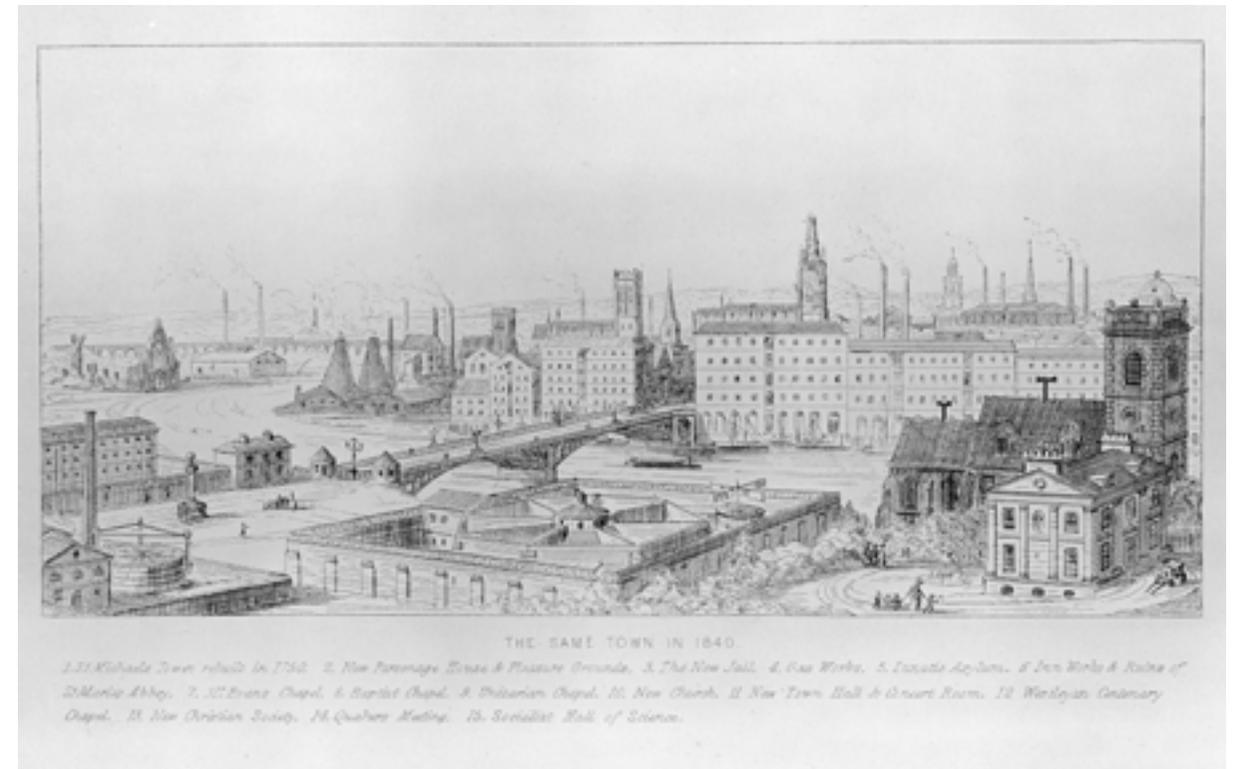
Nowadays, most kilns are run on gas, which provides a controlled and reliable firing environment. During the 18th and 19th centuries, copious supplies of coal were necessary to produce bricks and tiles in increasingly large quantities. Consequently, the Midlands, where abundant supplies of clay and coal were found together, became one of Britain's centres for industrial brick and tile making. Indeed, it was the particular skills and technological innovation found in north Staffordshire that provided the crucible for some of Britain's finest architectural ceramics including cast terracotta or 'faience' and decorative encaustic tiles.

During the late 18th century, the towns which were to become the City of Stoke-on-Trent were renowned for their fine dinner and tea services made from Cornish white kaolin clays transported via the new

'A Catholic convert, Pugin was not only a designer but a public advocate for Gothic architecture as a means to solve the many social problems of filthy Victorian industrial towns.'



Above and opposite page: Images from Pugin's *Contrasts*. Note the bottle-shaped pottery kilns to the centre-left of the 1840 town. Images © RIBA.



canal network. Unlike traditional wheel-thrown pottery, this was mass-produced from a carefully-designed liquid clay and mineral suspension (a liquid body known as 'slip') which was cast in moulds. Rather than traditional craft skills, these new 'manufactories' needed specialists: scientists who could create and record experiments for new, better bodies and glazes, and artists, sculptors, painters and designers who could create new shapes, patterns and moulds. The Potteries became a crucible for creative talent.

One of the most successful manufacturers was Thomas Minton and Sons, founded by Thomas Minton in 1793. The popularity of the firm's Chinoiserie 'Willow Pattern' tableware in the early 19th century allowed the company the freedom to experiment with products for new markets; smooth statuary porcelain 'Parian', ware 'majolica' glazed wall tiles and 'encaustic' tiles.

The process of manufacturing encaustic tiles was rediscovered by Samuel Wright, who obtained a patent in 1830 for the iron frames in which the tile mould was placed. A fly-press was used to press the clay into the mould to an even degree, to ensure greater consistency in firing and final performance. The combined designing and manufacturing prowess of the architect Augustus Pugin, and of Thomas Minton's son, Herbert Minton realised the full potential of Wright's invention. Encaustic tiles made a major contribution to the development of the

Gothic Revival in architecture in the 19th century, a compelling juxtaposition of Victorian antiquarianism with the very latest manufacturing technology.

Encaustic tiles are ceramic tiles in which the surface pattern is not applied to the surface, but rather pressed into the tile using a plaster mould, and the sunken relief then filled with one or more different coloured slips. For complex tiles with several different colour clays, inclusion of stiffer coloured clays in the pressing can be required. The tiles are then fired at particular temperatures and conditions so that the base material and slips are bonded, and the clays partially 'vitrify' and become waterproof.

Medieval encaustic tiles were usually made of red clay, inlaid with a yellow design, and often displayed a naturalistic subject matter. 19th-century tiles were more colourful, and frequently included blue, green and white inlays. While naturalistic subject matter was common, the 19th-century tiles also had geometric and heraldic designs. Technically too, the 19th-century tiles were more accomplished. Advances in kiln technology allowed production, on a much larger scale, of a product that was dimensionally stable and without significant variation in colour and durability.

While many encaustic tile floors of the mid and late 19th century survive, few of them are as significant as those in the Palace of Westminster in terms of technology, design and craftsmanship. The Old Palace of Westminster was largely destroyed by fire in 1834

(Westminster Hall, the Chapel of St Mary Undercroft and the 16th-century Tudor Cloister being the only parts to survive). The New Palace was built after 1840, following an architectural competition, to designs by Charles Barry who was assisted by A. W. N. Pugin. The brief for the competition called for a design in the Gothic (or Elizabethan) style. Pugin was instrumental in bringing Herbert Minton the commission for the floors of Barry's new Palace. The quality and scale of the floors was unprecedented and they are therefore of great significance in the history of Victorian interiors.

In 1836, Pugin published *Contrasts* (illustrated above), which featured paired engravings of idealised scenes from an imaginary medieval town compared with a dystopian industrial landscape that was not unlike that of the 19th-century Potteries. A Catholic convert, Pugin was not only a designer but a public advocate of Gothic architecture as a means to solve the many social problems of filthy Victorian industrial towns. The paradox of looking to the past to solve the problems of the modern era was expressed at the Palace of Westminster. While ostensibly backward-looking in its medieval architectural style, the Palace was at the forefront of Victorian design and engineering in terms of construction methods, fire-proofing, building services, and other technologies.

With the acquisition of the Minton archive by Stoke-on-Trent Museums, the history of Pugin's collaboration with Minton is now better understood.

Pugin typically supplied a drawing for a tile and then trusted Minton to complete the detail satisfactorily. In January 1852, Pugin wrote to Minton: 'I declare your St. Stephen's tiles are the finest done in the tile way; vastly superior to any ancient work; in fact, they are the best tiles in the world, and I think my patterns and your workmanship go ahead of anything'.¹

The New Houses of Parliament, as Barry's building was at first known, proved a prestigious global showroom for Minton; from the late 1850s, international orders for decorative encaustic floor tiles came from Australia (including Parliament House, Melbourne), Canada, the Caribbean, India (including the Royal Alfred Sailor's Home in Mumbai), New Zealand and the USA (including flooring for extensions to the Capitol building in Washington). In Britain, the expansion of towns and cities in the 19th century also provided opportunities for new polychromatic decorative surfaces, from vast municipal complexes such as Rochdale Town Hall, to hallways in suburban villas. In the 20th century, however, encaustic tiles once again fell out of fashion. Mintons ceased to make encaustic tiles in the early 1960s.

Modern Making

For the last 10 years, Donald Insall Associates has worked with Parliamentary Strategic Estates, tile

¹ Margaret Belcher, *The Collected Letters of A. W. N. Pugin 1851-1852* p.550 (Oxford, Oxford University Press, 2015)



Left: The liquid clay 'slip' being poured into the new encaustic tile. Photo © Adam Watrobski/UK Parliament.



A bar is attached to each spool with a 'comb' of tin tubes; each threaded with one yard to prevent movement during the weaving. 2008.

Living Looms Rescuing Kidderminster's industry

Peter Riddington

manufacturer Craven Dunnill Jackfield, and works contractor DBR (London) Ltd to repair the Palace of Westminster's encaustic tile floors. From 2006, the Parliamentary Estates Directorate commissioned and developed the process of making a one-inch-thick tile, rather than the half-inch usually employed for modern work. From 2009, Donald Insall Associates was appointed to the project.

A major challenge at the outset was to develop a tile product in the exact facsimile of the historic tiles. Craven Dunnill Jackfield Ltd is the successor to Craven Dunnill & Co, which was formed by Henry Powell Dunnill during 1872. The company's encaustic tile factory occupies the old 'Jackfield Works' building at Ironbridge Gorge in Shropshire – a building in the Gothic-industrial style which opened in 1874.

In a process that echoed Minton's early painstaking experiments, a wide range of different clay bodies, slips, pressing methods, drying times and firing techniques were trialled to ensure that the new tiles had visual and physical properties as close to those of Minton's original tiles as possible. Selected samples were then laboratory tested to confirm the slip resistance and surface porosity; accelerated abrasion testing was also undertaken to ensure that, in time, the tiles will wear in a similar manner to the existing examples. Progress in ceramic techniques has meant the loss of tiles during manufacture has been largely eliminated.

The project commenced on site during 2012 with work to St Stephen's Hall. New tiles have now been installed throughout the majority of the Palace, with the project due to complete in autumn 2019. The major technical challenge of the central circular panel in the Central Lobby with its complex interlocking circular, curved, and concave triangle-shaped tiles inlaid with multiple colour slips is still undergoing final technical development. Elsewhere in the Palace, several years after the laying of the initial areas, the floors once again appear as Pugin and Minton intended.

Vitrified blues and whites catch the light. The mastery of decorative pattern is appreciable, in each richly-coloured tile and also in the complex arrangements of tiles over large areas. Ignoring the weathering of age, the new tiles are practically indistinguishable from Minton's originals. However, there is one major difference. Minton's tiles emerged from the polluted and hazardous environment of the 19th-century Potteries. The area was, like much of 19th-century industrialised Britain, renowned for injuries at work, respiratory disease, and premature mortality. The new tiles, by contrast, are made in clean and controlled conditions in a rejuvenated late-Victorian factory, set within the leafy surroundings of the Ironbridge Gorge World Heritage Site. In the spirit of the Gothic Revival, the past has been rejuvenated using the latest manufacturing technology and standards. Of this, Pugin would undoubtedly have approved.

In 2007, David Luckham and his partner Mo Mant were commissioned to supply a spectacular carpet for a project in the USA. The client had paid for the work up front and the manufacturer was poised to start production. Then David received a phone call informing him that the factory was to be closed. Faced with a Hobson's choice, David bought the Victorian looms. Otherwise destined for scrap, these historic machines were the only looms able to achieve the number of colours, fineness of line, and character of a printed tapestry carpet. By saving them, David and Mo took on not just the means of production, but also a considerable liability.

Of all the various consultants and craftspeople Insall has worked with over the years, David is special. The need for high-quality floor coverings is an often overlooked aspect of presenting the most splendid historic interiors; David has helped us find the finest designs and best quality carpets.

From the early 1990s with the Mansion House in the City of London, David has sourced and supplied many of our keynote projects including:

- Liverpool Town Hall: Court Room and Main Reception Rooms
- Windsor Castle: All areas outside of the State rooms
- Royal Albert Hall: Circulation areas and Seating Areas

- Goldsmiths Hall: Court Dining Room, Stairs, Lower Ground Floor Hall and Clerk's Office
- Botley Mansion: All carpeted areas
- Hackwood Park: Ground Floor Curved Hall, Stairs and Landings
- Kenwood House: Deal Staircase
- Arcadian Library

It is sobering that most of the carpets which were supplied for these projects might no longer be possible as the majority of the manufacturers have either gone out of business or have resorted to lower quality production.

'Foote clothes'

Historically, carpets were a luxury, first seen in English homes in the 16th century. In 1520, Cardinal Wolsey acquired more than 60 oriental carpets and, by 1539, English makers were attempting to copy hand-knotted oriental carpets. When Henry VIII died in 1547, the royal inventories described over 400 floor and table carpets of Turkish origin, with the larger ones for the floor known as 'foote clothes'.

The 17th century saw the arrival of the first Persian carpets and, later, the collapse of the English hand-knotted carpet industry. By the early 18th century, increasing numbers of imported Turkish

carpets were being bought by the middle classes and ownership of them had become de rigueur by the end of the century. With the pace of change quickening, the 18th century also saw the development of the first British carpet – a flatweave Kidderminster double-cloth. Five years later, the first Brussels-weave carpet loom was built at Wilton in Wiltshire and, by 1750, both Kidderminster and Wilton were producing raised-pile carpets on hand looms. The use of carpet was now common, and in fashionable society, favour was for ‘fitted’ Brussels or Wilton carpets and a few hand-knotted carpets. Some architects, including Robert Adam and James Wyatt, designed carpets to be an integral part of their interior schemes, often reflecting the architectural features of the rooms.

The industrial revolution transformed the industry in the 19th century with the patented Jacquard colour/pattern system from 1825; shortly after this, the cottage system was replaced by loom shops. Change followed change and patent followed patent: Whytock’s printed tapestry process in 1834, Templeton’s chenille loom in 1839, a powered Kidderminster weave loom in 1842, and, at the Great Exhibition in 1851, a powered Brussels loom was exhibited which was later bought by Crossleys of Halifax. Other patents included the Spool Axminster (1878), the Gripper Axminster (1890) and the incredible ‘hand-knotting’ looms of Anglo Turkish and the French company Renard. There was also a short-lived revival of the hand-knotted carpet industry.

The 20th century saw a pattern of change and decline akin to most industries. Larger and faster machines were developed but, by the 1980s, overproduction and cheaper imported products created fierce competition. In response, there was a race to the bottom as prices were slashed and standards plummeted. Hundreds of the historic looms which had produced the highest quality carpets were scrapped. Without the looms, the attendant highly-skilled jobs were lost too. Archives of historic designs were dispersed.

Going, going, gone ...

To date, the following technologies have been lost forever: Kidderminster looms, Chenille looms, Printed tapestry looms, Anglo-Turkish looms, Renard looms, Worsted wool Wilton looms of two French weaving families. In addition, the following technologies are currently at risk of being lost: the last two small groups of worsted wool Brussels weave and cut pile Wilton looms; and the last group of worsted wool full-pitch spool Axminster looms. The latter category – the Axminster looms – were those purchased by David Luckham.

While tourism connected to heritage brings in approximately £16.5 billion annually, the contribution of historic carpets, and indeed other fabrics and finishes, to historic houses is almost always overlooked. Yet these items provide the setting for all the other furnishings and fittings in a room and are fundamental aspects of the original design of a historic interior. Carpet should be treated with as much respect as family portraits and other items. When a replacement carpet is sought for a historic interior, it should be made in a manner as close as possible to the original design and replicated from original source examples rather than later replicas. This was the approach taken with the second carpet produced following the purchase of the Axminster looms, for the Library of Felbrigg Hall in Norfolk, for The National Trust. Without the looms, restoration projects with this degree of authenticity would not be possible.

Now reaching retirement, David and Mo have begun an initiative to secure the looms for posterity along with, crucially, the skills to work them. The project is to be based in Kidderminster, the historic centre of the carpet-making industry. Donald Insall Associates has been involved in the project in an advisory capacity.

Kidderminster: the town that ‘standeth most by clothing’

In a visit to Kidderminster, some time around 1540, the King’s Antiquary John Leland noted that Kidderminster ‘standeth most by clothing’; its economy relied on the wool trade. By the 18th century the town had specialised in carpet making and consequently grew. In 1951 there were over 30 carpet manufacturers.

Today, it is sobering to tour the town. The likely original home of the rescued looms was the Rock Works, built in 1884 by Richard Smith & Sons, carpet manufacturers. It stands derelict.

The carpet industry in ‘Kidder’ is barely a shadow of its past. Factories – which until relatively recently produced carpets for Donald Insall Associates’ projects, the Woodward Grosvenor works and others, – have now been abandoned. Kidderminster is not unique as a place which has lost its staple industry, but the impact on the town is pronounced. Literally acres of mills and works have been lost and each has tragic human stories attached: skilled workers are no longer able to practise their crafts, and the wider economy declines.

Yes there’s a ‘Carpet Museum’ in Kidderminster, but few carpet companies have the ability to produce carpets. The question has to be asked: ‘isn’t the tradition of manufacturing our heritage, just as much as the bricks-and-mortar buildings within which these crafts were practised?’

‘It is to prevent further losses of traditional textile products by conserving the knowledge, skills and technologies of historic carpet-weaving for future generations.’



Above: The Team on a half washed original fragment, overlaying the new carpet, 2008.

Living Heritage

The rescued looms are currently housed in an industrial unit in Stourport-on-Severn. The ambition of the Living Looms project is to ensure the legacy of David and Mo’s almost accidental inheritance. It also seeks to prevent further losses of traditional textile products by conserving the knowledge, skills and technologies of historic carpet-weaving for future generations. Secondary to this aim, but still important, is the rescue of the derelict Rock Works. An application for Heritage Lottery funding is being developed.

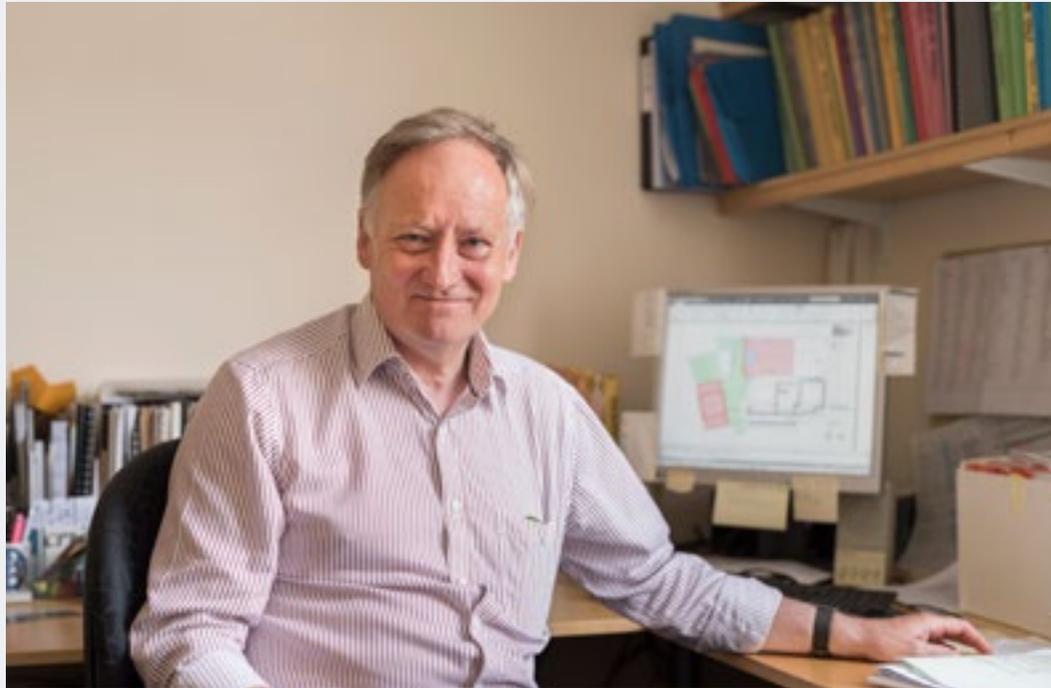
The project keenly needs support from others. This could involve orders for carpets but, much

more importantly now, offers of help in kind from people with time and skills which they can devote to the project. Donald Insall Associates’ Birmingham office has been offering *pro bono* assistance, but more needs to be done. In saving the looms from scrap, David and Mo’s intervention was critical. Now they need support from elsewhere to spearhead the revival of historic carpet-making machinery and skills, and contribute to the wider regeneration of Kidderminster.

Visitors are welcome at the works, by appointment.

The author would like to acknowledge the advice and guidance of Mo Mant, who contributed to this article. Find out more at: thelivinglooms.co.uk

Peter Carey (1951 – 2018)



Left: Portrait of Peter Carey, taken in 2016. Photo © Damian Griffiths.

Right: The Cross Baths, taken in 2006. Photo © Edmund Sumner.



Donald Insall Associates regrets to announce the sudden death of our colleague Peter Carey, who had recently retired after working with us for several decades.

Peter Carey had already established his credentials in the field of historic buildings before founding our Bath office, working on the Palladian Bridge at Prior Park, Avebury Manor and The Assembly Rooms, and before this the RIBA headquarters at 66 Portland Place, in London. At Insall, his most distinguished projects included Clifton Suspension Bridge, All Souls College, Oxford, and the most memorable – The Bath Spa.

Peter's work somehow expressed his warmth and his naturally gregarious nature – qualities which proved valuable in building up a valued client base in the South West. His enthusiasm for rescuing our most beautiful buildings was infectious, and was reflected in the huge breadth of friendships he made during a long career. A great many friends attended his funeral in August, as well as fellow professionals, those who commissioned him as their architect, and many craftsmen, reminding us all that for Peter there were no divisions. He would devote the same effort to encouraging a stonemason to liven up a carving as to persuading a client to use superior materials: his conviction usually won the day... and new friends.

Most of us fell under the spell of Peter's belief that anything is possible; not reckless optimism, but a profound conviction that ancient buildings, and the marks of time upon them, are worth saving. Peter retained a lifelong association with the SPAB, having undertaken the Lethaby Scholarship in 1977, and kept a miniature portrait of William Morris on his desk, lest Morris' influence should ever be forgotten. During the Lethaby Scholarship, some of us remember Peter travelling the country in his notoriously unreliable Citroen 2CV, holding on to the canvas roof for dear life when crossing the Severn Bridge, to avoid it blowing away! By chance, my first encounter with Peter was to show him our repair work at Speke Hall, Liverpool during the scholarship, beginning a friendship lasting 41 years. We later discovered we were restoring adjacent buildings in Chester, and each time we met I was astonished at how much I learned.

Peter grew up near Bristol, and after Marlborough College he studied architecture at Bristol, and a great many of his contemporaries later became distinguished conservation architects. In London he met Carol, his wife and soulmate for the rest of his life, whose design talents were complementary, and of late have included promoting emerging sculptors and painters in the West Country. Peter was later to use his natural teaching abilities not only to

inspire generations of internship students, but also, more formally, to teach at Bath University and the University of the West of England, Bristol.

His championing of the cause of conserving historic buildings, often in the face of what seemed to him to be mediocrity in the design of many modern buildings, might have seemed to some to be reactionary. Nothing could be further from the truth. Peter's open-mindedness and willingness to support the work of other architects resulted, for example, in Bath's first all-glass façade through his advocacy for Grimshaw Architects' design for the new Spa.

At All Souls College, in Oxford, Peter persuaded the Fellows that it was possible to air-condition the gigantic volume of Nicholas Hawksmoor's Codrington Library, and slide in a four-storey steel-frame bookstore invisibly into a hidden courtyard. Not only did he achieve it, but he did so without fuss or drama – except, that is, for the endless witty repartee between him and the delightful librarian, who remained a lifelong friend.

Peter's final building at All Souls was a bicycle shed, but no ordinary bicycle shed! The College wished it to be a classical structure so Peter worked with the eminent Oxford philosopher Derek Parfit to produce a Doric design. When it became clear this was unworkable, Peter (with the easy adaptability for

which early-19th-century architects were renowned) put forward a Gothic solution, albeit in steel. This was built, and the change of direction brought out Peter's love of alliterative quips. He said shortly afterwards: "well, we've lost Doric Derek, but gained Perpendicular Parfit...."

We all have our particular personal memories of Peter. They will almost certainly be humorous. Many colleagues will remember his daily 'pilgrimage' to Colonna and Small's 'coffee palace' just off Queen Square in Bath, where he could sample so many blends of coffee that there was never the tiresome need to taste the same blend twice in a year; his account was guarded by a ridiculously complicated password.

We treasure our memories of Peter, not just for what he achieved, but for the way in which he made each of us better for knowing him.

Peter is survived by his wife, Carol, and his daughter, Jessica.

— Rob Dunton



Accolades for the newly opened Temperate House

Described by Sir David Attenborough as 'breathtakingly beautiful', the Grade I listed Temperate House at Royal Botanic Gardens Kew has re-opened this May to much acclaim after a five-year, £41 million restoration programme with Donald Insall Associates as the conservation architects.

Removal of the older plants that previously touched the ceiling means that the structure of the building is visible for the first time in a generation. Kew's collection of 10,000 plants from around the world, including many rare and threatened species, will be better cared for in a building which will reduce Kew's emissions by 25%.

At the time of writing, the Temperate House has been shortlisted for the Building Awards, the World Architecture Festival Awards, and has won the Richmond Society Awards, to name a few. Project Associate Aimée Felton has been named by the RIBA as one of 119 inspirational women in architecture for Ethel Day.

Meanwhile, architect Rory Chisholm's concept drawing of the high-level actuators at Temperate House has been awarded second place at the annual RIBA Eye Line drawing awards.

Photo, above: Photo © Gareth Gardner.

Photo, right: Aimée Felton talks to journalists during the opening of Temperate House.

Illustration: Temperate House © Rory Chisholm.



John C Goom Ltd merges with Donald Insall Associates as Llwyn Celyn nears completion

The renowned conservation practice of John Goom Ltd merged with Donald Insall Associates at the beginning of 2018. Based in Evesham, John and his practice have developed an impressive SPAB-based portfolio of varying scales over 25 years. The company's philosophy aligns well with that of our own, and we are very fortunate that John has joined us as a consultant.

Since coming aboard, John has been working closely with our Birmingham office on the final stages of the Landmark Trust's project at Llwyn Celyn, a Grade I listed building regarded by Cadw as one of the finest surviving medieval hall houses in Wales.

Llwyn Celyn was built in c.1420 and had been inhabited continuously until the last occupants moved out in 2014. Since then, the building has become increasingly dilapidated, and is now considered one of the most important at-risk historic buildings in Wales.

A wonderful new Landmark Trust residence – the 200th in its portfolio – is being created in the main house so that up to eight people can experience Llwyn Celyn for holidays or creative retreats. The surrounding historic barns are being adapted for educational and community use. The site will become a beautiful and vibrant place where people can connect with their past, their environment and each other.

Photo: John C Goom © Damian Griffiths.



Statue of Dame Millicent Fawcett unveils in April on 100th anniversary of women's voting rights

The statue of suffragist leader Dame Millicent Fawcett, created by Turner-Prize-winning artist Gillian Wearing OBE, was unveiled in Parliament Square in April this year during a ceremony attended by Prime Minister Theresa May, campaigner Caroline Criado-Perez and the Mayor of London, Sadiq Khan. We designed its setting and acted as specialist adviser to the project.

The unveiling marks 100 years since women first won the right to vote with the 1918 Representation of the People Act. This government-funded monument is the first statue of a woman, sculpted by a woman, to stand in Parliament Square.

The plinth of the statue displays photos of 59 women and men who dedicated themselves to women's suffrage and helped secure the vote through their campaigning.

We are very proud to have been involved in the project since its inception, advising on an appropriate site within the English Heritage registered garden of special historic interest. The monument to Millicent Fawcett is situated at an accessible level and alongside the statues of Nelson Mandela (2007) and Mahatma Gandhi (2014) and in contrast with the more remote settings of the Victorian-era statues behind; the architectural contexts for all three monuments were designed by Donald Insall Associates.

We worked closely with Gillian Wearing, and guided the project through complex planning negotiations and the construction phase.

Photo: Artist Gillian Wearing OBE, centre, poses with Sadiq Khan, Caroline Criado-Perez, Emily Thornberry MP, Harriet Harman MP and others immediately after the unveiling of the statue. Photo courtesy of Greater London Authority.



Our new Oxford office

In January 2018, Donald Insall Associates opened a new studio in central Oxford, led by Associate Director Helen Ensor.

The practice has a history of working in the city, having completed a series of restoration projects for All Souls College and overseeing repairs to the Radcliffe Camera.

The office's first appointment was as historic building consultants to St Hugh's College, which opened in 1886. Lincoln College followed soon after with The Mitre site – a large complex of buildings on the high street. It comprises highly-graded listed buildings, including vaulted cellars which are believed to be Norman. The Oxford studio is working alongside architects from our Bath office to consider how undergraduate rooms might be upgraded to support the College's needs.

We are also working for a number of private clients on their listed buildings, including houses in the historic Park Town area.

Photos: The Oxford office (above), and The Mitre building (below), both © Damian Griffiths.

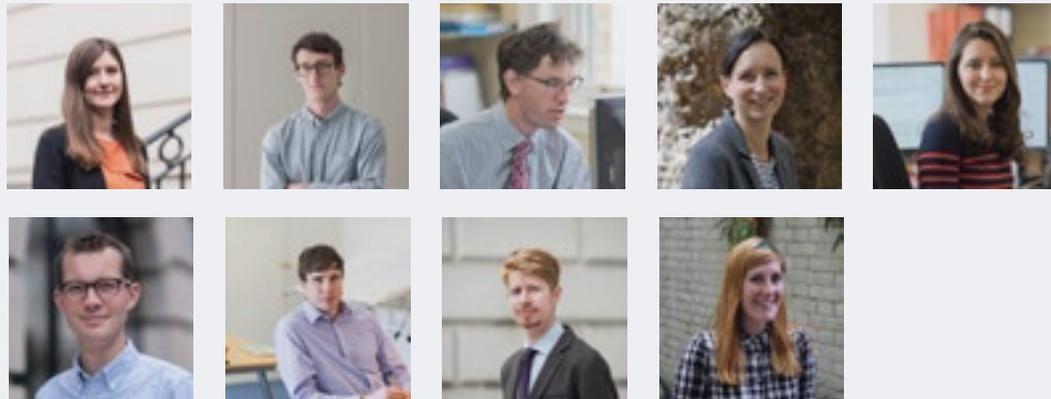


This year's promotions:

Top row, left to right: Sarah Bridger (Historic Buildings Consultancy), Senior Historic Buildings Advisor; Tom Bromet (London), Senior Architect; Patrick Duerden (London), Practice Director; Joanna Kelly (Historic Buildings Consultancy), Senior Historic Buildings Advisor; Eimar McDonagh (London), Senior Architect.

Bottom row, left to right: Jeremy Trotter (London), Senior Architect; Gwyn Roberts (Chester), Associate; Matthew Vaughan (Birmingham), Associate; Vicky Webster (Historic Buildings Consultancy), Senior Historic Buildings Advisor.

Not pictured: Nabeela Ameen (Cambridge), Senior Technician.



A set of freshly riven Westmorland slate photographed at Elterwater Quarry, 2018. Photo © Damian Griffiths.

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Donald Insall Associates, 2018