The Journal

RICS Building Conservation

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07

Get what you deserve
An added-value qualification

Conservation and sustainability
Restoring and re-using historic buildings

Learning while earning
Should your firm take on apprentices?

RICS

www.rics.org

Building Conservation Journal
No 45

Editor
Jan Ambrose
T +44 (0)20 7695 1554
jambrose@rics.org

Editorial advisor
Marianne Sühr

Production manager
Michelle Harradence

Advertising
Grace Healy
T +44 (0)20 7490 5644
grace@atompublishing.co.uk

Sub-editor
Phillip Blanshard

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Forum update

The forum has been looking for surveyors to join the board and is pleased to welcome David Alexander. Members will know David from his work as Head of Building Conservation at the Landmark Trust, where his painstaking pursuit of the highest quality work helped the Trust win several major conservation awards. These included commendations from RICS Awards. He is now working with the Royal Horticultural Society at Wisley Gardens. I am certain his drive and wealth of experience will benefit the forum.

While welcoming David, we say goodbye to Dr David Watt who has decided to stand down after a long time on the board. David has put in a lot over the years, especially working toward the success of the accreditation process and its continued application. We wish him well.

Much has been happening behind the scenes and 2007 will be a busy year. We are updating and re-publishing the series of *Do's and Don't's* on thatching, church inspections, damp and timber treatment, external renders and procurement that have been issued over the years within *Building Conservation*. The aim is to update most during the spring, with the help of the original compilers plus some assistance from others. These will be published on the web then produced in hard copy later in the year.

We want to add to the titles and have several subjects in mind, including:

- stone slating
- limes and rendering
- timber frame
- the environmental sustainability of historic buildings.

If you feel there are other topics where such guidance (and this is guidance with a small 'g') might be useful, or wish to contribute to the updating or compiling of any of the titles, please contact me.

The forum is working with English Heritage (EH) in the rewriting/updating of the joint EH/RICS *Historic Building and Ecclesiastical Insurance Guidance*. This is due for re-issue later this year and will be the primary source of guidance for advice on insurance matters.

Finally, we hope to achieve the publication of the building conservation guidance note, which Lynda Jubb has tirelessly headed up. This will be a major publication for the forum and RICS generally.

Adrian Stenning
Vice chairman
Building Conservation Forum

Return to glory

Bloomsbury Square, a garden square

DLG Architects has achieved planning consent for the second of two properties on London's Bloomsbury Square, allowing works to begin for restoration and conversion into residential apartments. Numbers 26 and 27, situated on the historic square's north side, were previously used for offices and a hotel. Landlord Bedford Estates sought to transform them for residential use after the listed buildings became tired and devalued and DLG, which specialises in building conservation projects, is to manage the conversion and conservation.

Anthony Walker, consultant at DLG, comments: "Listed building projects always present challenges but conversion to residential is becoming increasingly complex, both in the planning to respect historic character and in satisfying Building Regulations. Common problems include meeting energy criteria and sound transmission between flats, especially where there are important ceilings and floors to be retained.

"The designs for 26 and 27 Bloomsbury Square incorporate a curved screen which, although not part of the original development has been identified by the planners as being of interest. The staircase within 26 has been clearly retained – an aspect that is not always possible when splitting the building into self-contained flats."

Bloomsbury Square, developed by the 4th Earl of Southampton in the late 17th century, was initially known as Southampton Square. The Earl's own house, then known as Southampton House and later as Bedford House after the square passed to the Dukes of Bedford, occupied the entire north side.

The other sides were lined with typical terraced houses of the time, initially occupied by the gentry. By the 19th century, Bloomsbury was no longer fashionable and Bedford House was demolished and replaced with further terraced houses.

None of the original 17th century buildings survive, but there are many handsome 18th and early 19th century houses. To the square's east side is a large early 20th century office building, Victoria House, which was shortlisted to become London's City Hall when the Greater London Authority was founded in 2000.

Get what you deserve

An added-value qualification

RICS has joined the Society for the Environment as a constituent and licensed body. This comes after a year of negotiations, spearheaded by the RICS Environment Faculty and means that RICS will be able to award the chartered environmentalist (CEnv) qualification to members and fellows with suitable credentials.

Society for the Environment

The Society for the Environment is an independent, non-political umbrella regulatory and qualifying organisation of 14 professional institutions and learned societies, known as constituent bodies. Its prime focus is sustainable environmental management. As such, it is the leading coordinating body in environmental matters and a pre-eminent champion of sustainable development.

The Society for the Environment fosters a culture of inclusivity: it maintains the identity of all constituent bodies and recognises and enhances their primacy as centres of excellence within their fields. It adds value to the work of constituent bodies by creating opportunities for them to work as a team, thus demonstrating one of the most important values of sustainable development – cooperation.

Membership of Society for the Environment

RICS membership of the Society for the Environment is significant, given that awareness is steadily growing on the local and global environmental challenges that face us all. Professionally, there is an increasing expectation that surveyors will need to develop their knowledge and experience in environmental management and sustainable development.

Membership of the Society for the Environment benefits RICS at both an organisational and individual membership level. For RICS itself, membership of the Society for the Environment means it can network with other like-minded professional bodies. It also shows its strong commitment to the environment and sustainable development to both the public and government, and provides members with an added-value qualification.

CEnv qualification

The chartered environmentalist qualification establishes professional environmentalists on a par with other professionals such as chartered engineers and chartered scientists. It serves the needs of a broad range of environmental professions and it is expected that as numbers of national and international members increase, it will become the international benchmark.

Those RICS members who take up the qualification will be at the forefront of their profession and will benefit from further work being undertaken by both RICS and the Society for the Environment. The chartered environmentalist qualification entitles individuals, upon successful application, to use the title 'chartered environmentalist' and the designatory letters 'CEnv' after their name, in addition to their current RICS status.

Positive move

Philip Wilbourn of the Environment Faculty said: "RICS has made a considerable step forward in leading the market by joining the Society for the Environment. This means that from October 2006 all chartered surveyors will be able to use the dual designation 'chartered environmentalist' subject to an appropriate criterion being met which has been set by the Environment Faculty."

Dr David Hickie, chief executive of the Society for the Environment said: "We very much welcome RICS joining the Society for the Environment. As a pre-eminent champion of sustainable development, we are keen to promote the important work of environmental professionals in all sectors of commerce and business. This is a great opportunity now for chartered surveyors to show their 'sustainability' credentials."

How to apply and further information

Chartered environmentalist status is open to all MRICS and FRICS who can demonstrate competence in environmental matters and sustainable development. It is not restricted to chartered environmental surveyors: this qualification benefits all members whose work involves environmental best practice or sustainable development.

Application is made by a standard package including a form and your CV. On receipt, RICS will make arrangements for the application to be assessed. This would normally involve a professional review interview, but if RICS receives the application before 30 September 2007, then a fast-track 'grandparenting' process will apply.

> "RICS has made a considerable step forward in leading the market by joining the Society for the Environment"

For further information on becoming a chartered environmentalist, an application form or frequently asked questions, please visit *www.rics.org/socenv*
For any other enquiries on the qualification or to request a hard copy of the application pack, please contact RICS on *socenv@rics.org* or the Contact Centre on +44 (0)870 333 1600.
For further information on the Society for the Environment, please visit *www.socenv.org.uk*

Learning while earning

Ronnie Clifford, managing director of a specialist fibrous plasterers' firm, talks to Jan Ambrose

Does anyone reading this remember the Youth Opportunities Schemes (Yops) of the 1980s? These were heavily criticised by many as being 'meaningless work experience' programmes for young people.

Managing director of Pudsey-based Ornate Interiors, Ronnie Clifford would disagree: "I really wanted a career in stonemasonry when I left school: instead, I was offered work experience with a fibrous plasterers' firm in Pudsey and became fascinated by the stuff. It comes in powder form, and once it is turned to liquid, you can do anything you want with it. As an apprentice working on old buildings, I loved the fact that you were reinstating buildings and not pulling them down."

Under the Yops scheme, he spent six months in the workshop and then went to Leeds College of Building, where he achieved first of all his City and Guilds in Plastering, then his advanced City and Guilds in Crafts. Incidentally, he recalls that back in the 1980s, there were around 14 people on the course, all male.

Having left college, he worked for various firms of fibrous plasterers in Yorkshire on a mixture of restoration jobs, where fibrous plaster, never sand lime, was used. After two years working for specialist organisations, and still aged only 24, he set up Ornate Interiors, initially working on his own, later joined by his brother: "It wasn't easy," he admits. "The trade was quietening down and work was really, really tight throughout the 1980s and 1990s. And there was the dreaded paperwork."

The showroom at Ornate Interiors

Thank goodness for youthful enthusiasm, drive and, perhaps, arrogance. Ornate Interiors survived the lean times, refusing to compromise on quality and continuing to work with the same materials in the same traditional way. "You can't apply new methods – old methods continue to provide the only viable solution. I don't profess to know everything – you learn on every new job. We lean on people like Bob Bennett of the Lime Centre and the Scottish Lime Centre, who willingly impart expert knowledge. Getting the experts involved is the best way – conservation has a lot of contradictions, but you have to find the solution to the problem.

"I have a great team at Ornate Interiors. There are 12 of us, including two apprentices and people I've known from college days," he adds.

He shares Richard Sapcote's view (see December 2006 *Building Conservation*) about the importance of taking on apprentices, and takes on one every two years – no mean feat for a small organisation. "You need to spend a lot of time with them in the first year. But the apprenticeship system means you're learning and working straightaway. We're only a small firm – if you want to find quality, it's better to train in-house from the outset."

Asked about the shortage of craftsmen and attracting school leavers, he says: "This year, we had 30 applicants for one apprenticeship place, but we have struggled in previous years. Kids don't want to get their hands dirty. The building trade is portrayed in the wrong way at school: there's an impression that it's for 'difficult kids' – they don't realise this is a craft.

"To be an apprentice in this field isn't rocket science," he adds. "You need a reasonable education, to be quick on the uptake, and have the ability to think for yourself. Look at builders over the years – they weren't the dregs of education. A change of mindset is needed: it's a hands, tools, brain, skill, feel thing."

There are some very good practical courses, he says, for example, at the Scottish Lime Centre, and he adds: "Restoration needs to be in the public eye through TV and other media. The more we restore the historic buildings around us the more we can have a visual point of reference for what can be achieved using these traditional methods. There is a lot of heritage here that we should be proud of. Teaching kids to respect and recognise history is essential."

An important part of our history is the Houses of Parliament, he believes: "Get up close and you'll see the work that has gone into these stunning and vitally important buildings. It's breathtaking."

Lime harling was applied to the external walls of the chapel

"Look at builders over the years – they weren't the dregs of education. A change of mindset is needed: it's a hands, tools, brain, skill, feel thing"

His favourite modern building is surprising: "Dubai's Burj al Arab hotel. This kind of architecture is continually evolving and should stand the test of time.

"Today, everyone wants everything done yesterday. Victorian and Edwardian houses are living history. Think about Saltaire in Bradford, fabulous houses built around Salt's mill. You can see the homes of the managers, the foremen, the workers. People are still living in them."

Nearly 20 years on, Ronnie, who still likes to spend 50% of his time in the workshop, cites Newcastle Station as one of his favourite projects: "This involved reinstating 90 rooms: there were concerns along the way, but we worked with a great team."

Recent projects have included a new build private chapel in the north of the country, for which Ornate Interiors has won the prestigious Federation of Plastering and Drywall Contractors (FPDC) Plaisterers Trophy.

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Externally, lime harling was applied using natural hydraulic lime (NHL3.5) mixed 1 part lime to 2 part sand for the scratch coat and 1 to 2.5 parts for the second coat. For the final coat, the harling/wet dash comprised a mixture of 1 part lime to 2 parts sand, mixed with pebble aggregate to give a rough finish.

Internally, work on the curved panels that form the background of the cover in the nave and vestibule were cast in Ornate Interiors' workshop. They were then transported 250 miles to the site and fitted together.

"Victorian and Edwardian houses are living history. Think about Saltaire in Bradford, fabulous houses built around Salt's mill. You can see the homes of the managers, the foremen, the workers. People are still living in them"

Ribs were manufactured for installation across the ceiling with more prepared for the ceiling's length. Two different-sized lunettes were manufactured, each curved to the face and sides that ran between the wall columns at a radius with the ceiling coffers.

Beam moulds were fitted to the apse, vestibule end of the ceiling and down the sides. The apse was manufactured in three giant 2.4m sections. Four types of rosette were cast in plaster before being installed into each coffer on the apse. A flute mould was installed to the top band of the apse. An anthemion model was carved in timber, poured in rubber and cast in plaster plates, then installed in the top of the apse.

A natural hydraulic lime plaster was applied in three coats to the walls between each of the columns.

"The job was extraordinarily demanding, but it's resulted in a stunning brand new chapel, that retains many historic and decorative traits," says Ronnie. "At the end of the day, I love going past a building that I'm proud of and telling people that I worked on that."

The vestibule rosette required fitting in 12 separate sections

Coffered ceiling prior to redecoration

Interior of chapel

Not just a pretty façade

"The brief was to restore it so that it could be 'read'. Every opening, every blocked up doorway or joist pocket – they're all part of its fabric and tell its story"

In Wigan, Lancashire, the gable end of a 17th century house and remaining façade of a now demolished hotel have been restored by Maysand, building conservation and restoration specialists. The two historic structures are being incorporated into the Grand Arcade, a 39,000m^2 retail development under construction by Shepherd Construction, is scheduled to open this Easter.

Jason Kennedy, conservation and design officer for Wigan Metropolitan Borough Council explains: "The Grand Arcade is in a conservation area. We wanted to retain existing architectural features that would lend something to the overall development, to act as a contrast to the ultra-modern shopping centre.

"Pennington on Millgate is a Grade II listed Georgian town house. It has had various uses over the years, but needed some serious remedial work so it would form an aesthetic and integral part of the finished structure.

"The Ship Hotel wasn't listed, but we considered the façade, with its stucco panelling, terracotta and art stone to be of high architectural value and local interest. The rest was demolished and the front elevation incorporated into the Grand Arcade."

Maysand's skills were already well known to Wigan Metropolitan Borough Council's conservation team: "With this kind of work, the nation's heritage is at stake and you don't get a second chance. We've worked with the company a number of times and knew they could be trusted to do a meticulous and high-quality job," adds Jason.

Mick Fowles of Maysand says that the Pennington gable was a fascinating project: "The brief was to restore it so that it could be 'read'. Every opening, every blocked up doorway or joist pocket – they're all part of its fabric and tell its story.

"We raked out the old straw and clay mortar by hand and repointed using lime mortar. Concrete lintels were taken out and replaced with oak. We removed all the breeze blocks and replaced the bricked-up areas with new handmade bricks set back slightly to maximise the effect. It's like a sort of history in relief now. It may look like an old wall, but we're really proud of the work we've done to restore it, to let it speak for itself."

Pennington gable before and after

Looking after our inheritance

Richard Oxley of Oxley Conservation talks to Jan Ambrose

"Traditional and modern buildings differ because of their method of construction, not because of their age or listed status"

Regular readers of *Building Conservation* will be aware that Oxley Conservation is drafting information papers about the application of Part L to historic buildings for English Heritage (EH). This is a major task, and so it seemed an appropriate time to find out some facts about Oxley Conservation.

The organisation was founded in 1997 by Richard Oxley, formerly a residential building surveyor. An increasing interest in older buildings, fuelled by background reading, confirmed his suspicions: conventional education was not geared towards this style of housing.

He took the CEM distance learning course for the RICS Diploma in Building Conservation. Having gained his diploma, he spent several months looking for relevant business opportunities: "I didn't want to waste the time I'd spent studying and was committed to a career in building conservation," he explains. "Fortunately, I was attending a lot of courses organised by SPAB and local conservation organisations. A specialist conservation building contractor, Ian Pritchett, suggested I joined his business, IJP Building Conservation. Working with Ian and his team really developed my skills and knowledge. I saw how buildings were dismantled, how they worked, how they were repaired, what clients expected, and how other professionals worked."

After two years, Richard set up on his own. He founded Oxley Conservation, whose office, in the time-honoured way of many new businesses, was initially in the spare bedroom of his house. As business grew, so did his house. He had to build an extension to cope with the increasing workload and additional staff (by this time, he had been joined by Phil Ogley and John Gleeson). The most recent edition to the practice, Catharine Bull, is a chartered surveyor and former Lethaby scholar of SPAB.

In 2006, Oxley Conservation moved to offices in Henley. In keeping with its environmental and conservation aims to preserve existing resources, the double-hung sash windows at the premises were retained, overhauled, and draught-proofed. Air pressurisation tests showed that this work would reduce fuel bills and improve staff comfort levels.

So what does Oxley Conservation do?

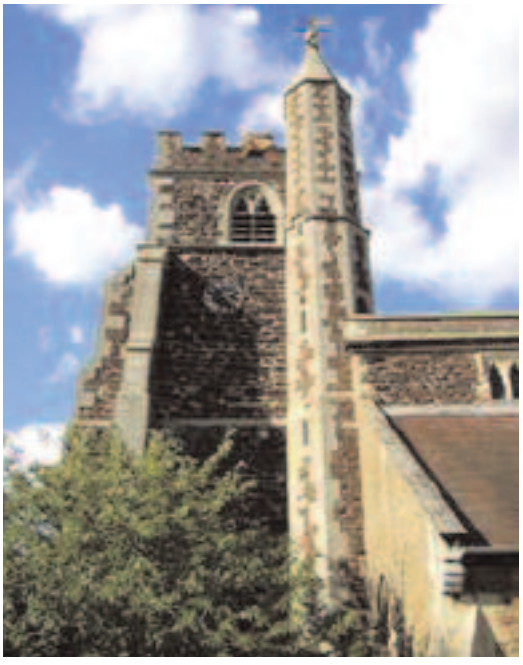
It is a historic buildings consultancy dedicated to sustaining traditional buildings through appropriate repair. Richard believes we have a responsibility to future generations to look after what we have inherited. The practice offers a broad spectrum of services to owners and custodians of old buildings. These include project management, contract supervision, environmental assessments of traditional buildings (including investigations of air infiltration), and training: Richard is compiling a programme of courses and workshops.

"Traditional and modern buildings differ because of their method of construction, not because of their age or listed status," he says. "Surveyors must appreciate the defects from which a building is likely to suffer, and the influence they will, or could, have on its structural integrity."

Recent projects include works at the Grade II* listed church of All Saints in Wokingham, Berkshire. Constructed with puddingstone, a natural conglomerate, large pebbles had started to fall from the weathered matrix. Investigations showed that the church had been previously rendered, justifying the solution of re-rendering it with a lime putty-based thrown render that was then limewashed.

"It is good building conservation to understand the building, identify causes of defects and prioritise repairs that address the causes," he adds. "Unfortunately, I have found that historic and modern buildings are treated in the same way. Ill-conceived solutions can result in repairs that don't work, even leading to the accelerated deterioration of the building."

An important part of the practice's work is development of solutions to achieve lower energy consumption without compromising the appearance, character, or performance of traditional buildings. It aims to specify materials from renewable, sustainable and local sources; that have low-embodied energy; have low toxicity during



The church at All Saints before work started

The church after completion of works

Closer investigations to the nave wall showed that the Victorian construction had failed. Partial rebuilding of the outer skin of stonework and improved bonding detailing between the outer stone skin and the inner core remedied this inherent defect

manufacture and use; and are consistent with the performance characteristics of the building.

The organisation has also received the Oxford Preservation Trust Environmental Plaque Award 2006. This was awarded for 'exemplary work' at the Church of Birinus, Dorchester on Thames.

Richard encourages the environmental control of damp and timber problems, rather than over-reliance on unjustified treatments: "Hutton + Rostron, Brown Ridout and EBS are the leading players in this area," he says. "They provide a viable option to conventional remedial work, which is based on chemicals and treating the symptoms, not the cause.

He believes we are living in dynamic times: "How we respond to global warming is our greatest challenge. Surveyors can make a worthwhile contribution to reducing carbon emissions from the existing building stock. We must ensure that energy-efficiency improvements actually reduce these and take into account the long-term interest of the building and its occupants."

RICS should be more attuned to conservation professionals, he says: "There are people out there with real knowledge and passion. RICS must channel its members' enthusiasm in a positive manner. I am concerned that building conservation is seen as an elitist specialism, when in fact it brings you into contact with a wide range of issues."

Richard Oxley feels strongly that, rather than criticising current practices, those living in or working with traditional buildings, should be encouraged to recognise their special needs. He has authored or co-authored a number of publications, co-organised conferences, and is a regular lecturer at conservation events.

And of course there is that consultancy work for EH on the application of Part L to historic buildings. The drafts are then scrutinised by an advisory panel, whose professional membership includes the forum's Henry Russell.

So how does a busy professional escape from the pressures of work?

His favourite historic building, the ruined Priory on the Hebridean island of Oransay, is accessed via a tidal causeway. It's also where he goes to get away from it all: "Even when the tide is out you're still up to your knees in water. You look at this well-preserved ruin and realise how remote it is – there's nothing between you and America. It's so isolated."

But – any busy professional who wants to follow his example should remember you have to get back before the tide comes in.

For more information,
T +44 (0)1491 414191
F +44 (0)1491 414198 or
***info@oxleyconservation.co.uk* or**
www.oxleyconservation.com

Timber!

An ancient craft is alive and well in the UK

To most people nowadays, the word 'log' can only mean something to do with starting up a computer. The 55 employees at Carpenter Oak & Woodland, based in Colerne in the heart of Wiltshire, and at Kirriemuir, Scotland, would beg to differ. To them, logs are, and have been for many centuries, something to do with trees: the company prides itself on its breadth of knowledge of timber framing through the ages and across the world.

Founded in 1987 by Charley Brentnall, the company specialises in building new timber frames, conserving the old, and regenerating the skills and crafts of timber framing. From the outset its growth was phenomenal, as its turnover grew from £200 to £2.5m in three years, and today its work falls into four distinct divisions:

- traditional and contemporary timber frames
- conservation and restoration
- timber engineering
- special projects.

Woodland Products, part of the company's conservation and restoration division, holds the UK's largest stock of air-dried curves in a vast array of shapes and sizes. It makes high-quality roofing shingles, framing and tile pegs, all hand cleft from British timbers.

Although the staff counts it a privilege to work with such a fascinating material and contribute to our future heritage, it always welcomes third-party recognition, which is in plentiful supply. The company has been awarded various industry accolades, including those from organisations such as RIBA, the Civic Trust, and Wood Awards for its work on Solar Canopy, Doncaster; Stirling Castle; Whitchurch Silk Mill; Burseldon Windmill and Windsor Castle.

The geographical area the company covers is nearly as wide as the diversity of its projects: "We've worked all over, both on private commissions and for organisations such as the Landmark Trust, English Heritage, the National Trust and Historic Scotland," says Charley Brentnall. "There have been projects in the south of France, where we worked on a medieval barrel-vaulted house in a walled village, in Wales, Hampshire, Sussex, Surrey, the Channel Islands and locally in Wiltshire. Our work includes running maintenance, repairs to Windsor Castle's medieval kitchen roof, and lots of projects involving churches and their towers. There are more multi-tasking projects in Scotland where there are a lot less timber-framed buildings than in the south."

Hammer beam trussed roof at Stirling Castle

Jousting at Warwick Castle, taking place at the foot of the world's largest working oak trebuchet (a medieval military engine for hurling stones)

Castaway Pods on the Outer Hebridean Island of Taransay (designed for the BBC TV series *Castaways*) showing oak frame constructions with softwood cladding and turf roof

So business doesn't seem to be a problem, but what about the shortage of skilled craftsmen we hear about from other sectors of the industry?

"In the south of England, we've never found it hard to recruit suitable people. In fact, we've always got a long waiting list," says Charley. "It's a little more problematic in Scotland, which is more isolated and would require people to relocate."

The 'suitable people' to whom he refers are recruited from all walks of life. They may include time-served joiners, carpenters, ex-boat builders, furniture makers, or those from an engineering background. Although people with some experience and knowledge of buildings are preferred, the organisation does take on school leavers and put them through their NVQ.

Training is 'on the job': all skills are broken down into modules, and people choose the elements and work at their own pace. It does, however, depend on the throughput of work in the workshop: for example, if there are a lot of conservation projects, students will learn that aspect quicker. Charley stresses that conservation is an important aspect, and all trainees are required to understand its principles.

Carpenter Oak & Woodland also offers training courses at York University and CPD sessions at architects' offices for both RIBA and the Royal Institute of Scottish Architects (RISA): "Inevitably, these are just touching the surface, but these courses give professionals a basic understanding of all the different types of materials."

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Dolbelydr – A conservation job in Wales

Property under conservation repairs, showing the spliced repairs on the original floor beams

Restored property back to its original beauty

The organisation's staff comprises highly skilled craftspeople from all over the world: "They come to work with us because we offer the opportunity to become acknowledged specialists working on the most inspirational and beautifully executed structures around," says Charley. "A skilled carpenter has to undertake an eight-year apprenticeship before becoming a Carpenter Oak & Woodland master framer."

Students from affiliated organisations in France and Germany attend apprenticeship schemes: these can be from 3-10 years, depending on which organisation they come from. Charley maintains that the learning process is a two-way thing: "We can find out a lot from European techniques. Timber framing in the UK largely died out in the 1900s, and its rebirth was due to repair and maintenance in the 1970s. France and Germany kept going, and the UK learnt a great deal from them."

The company has a comprehensive environmental policy for all timber purchases, which includes buying UK-sourced timber wherever possible. Although obviously laudable, this environmental stance costs it a significant amount in lost profit. An additional complication is that its unique quality standard and specification makes its products more expensive.

On the subject of the environment and sustainability, each building needs a structural skeleton, whether it is concrete, stone, brick or timber. The energy needed for the use of these materials in construction (embodied energy) includes their extraction, manufacture, treatment and transport. Using any material obviously impacts on the environment, but statistics prove that timber is by far the most friendly:

- locally grown timber has a typical embodied energy value of 220kWh/m^3
- steel has a typically embodied energy value of 24,700kWh/m^3
- aluminium has a typically embodied energy value of 141,500kWh/m^3.

Timber in construction is 100 times more energy efficient than

> "Timber in construction is 100 times more energy efficient than its modern counterparts"

Glossary of Terms

Bottom plate – the horizontal timber that takes the vertical structural posts

Plugging – a timber plug inserted to hide the head of a metal fixing

Sapwood – the working part of the tree, this is the respiratory and food transport system and more recent growth. It is more prone to insect and fungal attack because of its high sugar content

Shake – the natural longitudinal splitting of the timber as it dries out over many years – this does not affect its structural integrity.

its modern counterparts. Charley says: "Trees are nature's carbon dioxide filters. The use of timber in construction has rejuvenated commercial planting in the UK and the industry is now wholly self-sustaining, which helps remove harmful gases in the atmosphere."

As an additional positive contribution to the environment, the company plants up to 10 fast-growing trees for every one it uses. Charley maintains that if timber is kept dry, it can last centuries, and Carpenter Oak & Woodland only uses timber treatment as a last resort: "We use boron, which has low mammalian toxicity," he says. "There are other factors to consider. Many treatments are carcinogenic and treated timber can't be disposed of by burning, which creates toxic fumes or residue in the ash. It should be placed in sealed bags and transported to sealed landfill sites."

He believes that we can learn hugely from historic methods, stressing that we wouldn't be here if it wasn't for the inspiration of the past: there is a huge test bed of buildings of all types that have lasted or failed over the centuries. He also admits to still getting a thrill from his work – "you never know what's going to happen".

That is certainly true given the changing world in which we live. On two separate occasions, he has travelled to Antarctica for several weeks at a time, to assess Scott and Shackleton's hut which is currently suffering from mould. Sadly, it appears that buildings which have a tremendous story to tell and have endured for many years are not exempt from the dreaded climate change.

Finished restored bedroom

For more information on Carpenter Oak & Woodland
T +44 (0)1225 743099
info@carpenteroakandwoodland.com
or
www.carpenteroakandwoodland.com

Events

Threatened Coastal Heritage: Understanding the Issues

Friday 4 May 2007
Waxham Great Barn, Norfolk

An important seminar jointly organised by the University of Lincoln, Norfolk County Council, and H+R

The threat of climate change to our coastal and maritime heritage is potentially devastating. Predicting the effects of such change and managing the risks to historic and natural environments requires an understanding of complex and interrelated issues. Speakers from English Heritage, the Environment Agency, the National Trust, UCL Centre for Sustainable Heritage, Norfolk Museum Service, and Trinity House Lighthouse Service will discuss:

- managing the coastal historic environment
- the Environment Agency and archaeology in a time of climate change
- the National Trust and coastal risk assessments
- climate change and the historic environment
- Maritime Heritage East – shared heritage and regional distinctiveness
- effects of the marine environment and the use of renewable energy for building conditioning.

Registration fee £20 (including refreshments)
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To book a place, contact Dr Belinda Colston, University of Lincoln T +44 (0)1522 937448 or *bcolston@lincoln.ac.uk*

This building is sick

Sometimes buildings need tender loving care. Building pathologist Dr Jagjit Singh talks to Jan Ambrose

Jagjit Singh

Jagjit Singh, managing director of Environmental Building Solutions (EBS) and international expert on fungal and pest infestation, is passionate about dry rot. In fact, he is so interested in this dreaded fungus, estimated to cause around £400m of damage each year to UK properties, that he has visited the Himalayas on four occasions to locate its source.

Well known as a lecturer and author throughout the profession, he has worked for over 15 years as a building pathologist and environmental health scientist. He has experience in heritage conservation and indoor air quality in both academic and commercial environments worldwide. His current research focuses on interrelationships of building structures and materials with their environments and occupants.

The numerous projects with which he has been involved include:

- non-destructive testing, environmental monitoring and assessment of infestation and timber decay at Hampton Court Palace, Windsor Castle, Dover Castle; Deal Castle; Mont Orgueil Castle, Jersey; Cardiff Castle; Telc Castle in the Czech Republic and Williamstown Castle in Dublin, Ireland
- damp, infestation, decay and contamination monitoring at British Museum, Trinity College Library Dublin, Royal William Yard, Plymouth, Norwich Union Headquarters, Norwich, Somerset House
- monitoring of the environment and books at the National Library of Scotland; Sheffield Archives, Guildhall Library, Courtauld Institute Library and Post Office Archives; subsequent recommendations for environmental remediation and management
- advice on moisture damage and monitoring the drying down of Guy's Hospital, the McVities factory, and Jordan's meeting rooms after fire damage
- environmental surveys and monitoring of numerous churches, palaces and monuments all over the world
- research and development work on dry rot, environmental monitoring, mould and house-dust mite in buildings (this includes a government research project).

Dry rot has caused the decay of this staircase

His philosophy to conservation is simple: "Whether it is timber, painting, archives, or the actual building, you must understand the material," he says. "It's fundamental, like a doctor understanding the human body. If you understand the materials and see the symptoms, then you know what's wrong with them. But it is essential to have hands-on experience.

"Materials decay because of environmental factors – they degrade when humidity is high, which creates the right conditions for decay organisms, such as dry and wet rot. These fungi destroy structure, health and decoration."

The answer, he says, is sustainable conservation: "We are too keen to poison materials with chemicals. Once the material is poisoned, the organism, which needs food and drink to survive, can't eat it and will die. But the basic problem is still there. You need to change the environment. We need to take decisions based on our knowledge of materials, organisms, and buildings."

Besides dry and wet rot, of course there are pest infestations, and Jag believes that climate change has brought the biggest threat yet to Britain: "Already there are three known outbreaks of termites in Devon and Cornwall. Termites live in mounds in the ground and tunnel underneath buildings," he explains. "They eat very quickly: while dry and wet rot will take years to cause substantial damage, termites, which eat anything cellulose, including books and timber regardless of its age, can cause devastation within months. The termite has a fungus in its gut that decomposes the cellulose and helps it digest timber."

If that's the illnesses that buildings can sustain – and make no mistake, dry and wet rot can severely affect the health of occupants too – what's does the doctor propose as a cure for the problem?

EBS believes in a greener approach. "Environmental control relies on controlling the cause of the problem by controlling the environment," explains Jagjit. "It is designed to ensure the future health of the building and its occupants by avoiding potentially hazardous and environmental damaging chemical pesticides."

Eradication of dry rot spores or insect pests in a historic building is, in practice, impossible. The volumes of chemicals required would harm the building and affect its occupants. Where chemical treatments cannot be avoided, materials and techniques should be used that have minimum adverse environmental effect.

"By reducing the need to expose and cut out infected material, environmental control reduces

Infestation of dry rot in a historic building

"We are too keen to poison materials with chemicals. Once the material is poisoned, the organism, which needs food and drink to survive, can't eat it and will die. But the basic problem is still there. You need to change the environment. We need to take decisions based on our knowledge of materials, organisms, and buildings"

damage to the fabric and finishes of a building. This is particularly important where a historic building is concerned. The specification should ensure conservation of existing materials, both to maintain the fabric's historic integrity and to avoid unnecessary expenditure."

The success of this, he adds, depends on a thorough investigation of cause and effect: this can decrease the cost of remedial timber works significantly, or even eliminate it. In cases of actual or suspected problems with wood rot or wood-boring insects, this investigation should be carried out by an independent specialist consultant, architect, or surveyor. Correct identification of the fungi and insect material is important: not all are equally destructive, and some may be dead or dormant.

Having identified the nature of decay, he says, consider the environmental conditions required to support it. Only then can a scheme be devised to deal with the problem.

"The aim of remedial building work is to control the decay, prevent further decay and correct any significant building defects resulting in conditions of high moisture content or poor ventilation of timber," explains Jagjit. "In particular, it is important to reduce sub-surface moisture content of all timber to below 16-18%. Timber should be isolated from damp masonry by air space or damp-proof membrane, and free air movement should be allowed around timber in walls, roofs and suspended floors. All other sources of water should also be eliminated, such as leaking plumbing, condensation, or rising damp. Humidity in voids should not exceed an average of 65%. All active fungal material and rotten wood should be removed, and the structural strength of the remaining timber and fabric construction assessed to determine whether renewal or reinforcement is required.

"In the case of insect infestation, measures should be introduced to avoid recontamination. Dirt, dust and builders' rubbish provide a haven for insects and fungi, and voids and cavities should be cleared and cleaned with a vacuum cleaner." A programme of building maintenance and monitoring may then be instigated, and EBS has developed highly sophisticated monitoring systems. These check the moisture content of timbers in inaccessible timbers, can predict internal environment conditions due to change of use, and simulate changes in seasons.

Jagjit's crusade of educating people to look after buildings properly ("buildings need to breathe, they need Gore Tex, not a Barbour jacket") is getting through, but it is an uphill struggle. A number of organisations now support the EBS philosophy of "not a single chemical, get the detail right". These include RIBA, English Heritage, the National Trust, Historic Scotland, Crown Estate, and conservation-minded local authorities.

He welcomes every opportunity to publicise his message about environmental solutions that will save buildings, conserve our heritage, and prevent health problems. After all, he reasons, what's the point of attacking building problems with more chemicals – there's no shortage of pollutants in the world anyway.

Decayed timber Bressumer beam in the ceiling of an embassy in London

"After all, what's the point of attacking building problems with more chemicals – there's no shortage of pollutants in the world anyway"

For more information on Environmental Building Solutions
T +44 (0)1525 261922
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The past is the future

A conference considers the restoration and re-use of historic buildings

Royal William Yard from the water

The great and the good of the property world were the speakers at a conservation seminar with a twist, *Refurbishment of Historic Buildings: Regeneration and Sustainable Conservation Solutions*, a one-day conference organised by CPT Events.

Jason Collard, managing director of Urban Splash (South West) gave the first of an impressive series of presentations. Jason has a background in architecture, and his current role within Urban Splash involves expanding its business in the south west and overseeing the development at the Royal William Yard, Plymouth.

Urban Splash (South West) has competed the first phase of the development at the Yard. Two Grade I listed buildings have been converted into 129 apartments and commercial space. The next phase is transforming The Mills building to create 77 further apartments and some 50,000 square feet of commercial space.

"The whole project will extend to some 500,000 square feet of mixed-use, residential, office, retail and leisure spaces," said Jason. "We are creating a new sustainable community."

Beside the Royal William Yard, the team is converting the Imperial Tobacco Headquarters (now known as Lake Shore) in Hartcliffe, Bristol and the redevelopment of East Wharf, Watchet, in West Somerset. These two projects will create 426 homes and some 45,000 square feet of commercial space: the project at Lakeshore (previously an eyesore) features an innovative ground bore heating system.

Transforming listed buildings into futuristic developments has, Jason admitted, involved building relationships and having arguments with English Heritage and having to work with the local authority

A sympathetic conversion – modern living space retains the historic features

approach to listed buildings. His advice to delegates was to "let the building help deliver the solution".

The next presentation, *Architectural Assessment and Innovative Sustainable Solutions*, was given by Christopher Balme and George Ferguson, both of Acanthus Ferguson Mann. George Ferguson is an architect who, in the mid-1970s, built up his own practice, which led to the formation of Bristol-based Ferguson Mann. Ten years later, he founded the national group of practices, Acanthus, of which he is chairman. A past president of RIBA (2003-5), he founded the Concept Planning Group which planned the £90m Bristol Millennium project @ Bristol, winner of the 2002 Civic Trust Urban Design Award.

Christopher Balme is a director of Acanthus Ferguson Mann, with particular responsibility for conservation and inclusive design. Included in his portfolio is the ongoing project at the 18th century ››

Prior Park, Bath. This originated in 1986 with the development plan for the school and included restoration and repairs to the mansion, devastated by fire in 1991, which have received two RICS conservation awards. He is currently overseeing the restoration work of the Serpentine Lake and Cascade in Prior Park Landscape Garden. He has also been involved in urgent repairs and conversions at 19th century Tyntesfield; repairs to the Edwardian Sidwell Street Methodist Church in Exeter, renowned for its pioneering use of reinforced concrete; and access and environmental improvements to Bath's Roman Baths.

He referred to the Prior Park project as "my baptism with serious conservation, literally, by fire" adding: "The starting point is to understand the big picture, then get down to particulars."

One of the 'particulars' he had to deal with was the fact that the fire caused £10m worth of damage, and the insurance would only pay £2.5m: he stressed the importance of not "spending loads of money", considering practical re-use of buildings, and thinking laterally.

Stephen Bond, who gave a paper on *The Proper Management of Use and Change*, is director of TFT Cultural Heritage, a specialist division of Tuffin Ferraby Taylor, which integrates the disciplines of conservation, strategic and economic planning, regeneration, and heritage management. "Sustainable conservation is the proper management of use and change in and around historic places and spaces, so as to respect and enhance their value to society," he said. "Conservation isn't about preventing change – it's about shaping use and change. Conservation applies to projects as diverse as Chester Station, national treasures, mill towns and cultural landscapes.

"The approach to management of the historic environment is provided by a holistic understanding of the significance of the place, and appreciation of how these values will prove vulnerable to damaging change. We must plan ongoing use and change, wherever possible mitigating their damaging effects," he added. "It's not rocket science – we've been doing it for years."

Management tools for this approach were characterisation of areas, area appraisals, and conservation plans and statements, going on to itemise the processes involved.

The first speakers after lunch (the infamous 'graveyard slot') were Dr Jagjit Singh and Huw Lloyd, of Environmental Building Solutions (EBS). Anyone who has heard EBS presentations previously will know that boredom is not an option.

Their presentation covered *Damp and Rot threats to the Health of our Cultural Heritage and Building Fabric: Sustainable Conservation Solutions*.

Drawing on the organisation's vast experience of both national and international projects, Jagjit discussed the destructive horrors that could attack historic buildings and impact on the health of occupants. These included damp, decay, and various infestations. Huw covered non-destructive inspection and environmental monitoring, data acquisition, and remedial measures.

Gerard Lynch, a historic brickwork consultant, used the restoration of the Grade II listed Chesterton Gateway, built in 1662, as a case study for his presentation. There were a number of philosophical issues surrounding the principles of repair, and in a thought-provoking session, Gerard demonstrated how the gateway was restored in 1991, within six weeks and to a budget of £30,000. His final slide was of the Chesterton Gateway in 2003, which thanks to successful restoration, had been saved: "It would have been a pile of bricks otherwise," said Gerard,

The importance of working to a strict timetable and within budget was underlined by Clive Dawson, of Hockley & Dawson Consulting Engineers. Clive, whose knowledge of construction methods and specialist techniques enables him to resolve complex structural problems, has worked with some of England's finest historic buildings.

The final session, *Acclaimed and Successful Refurbishment Schemes* was from Anne Fletcher of Dublin Based Coady Partnership Architects. Her presentation concentrated on the successful transformation of Leitrim Arts Centre, a former neo-classical county court building, and the town hall in Carrick on Shannon, now used as offices by Leitrim County Council.

All the presentations demonstrated how many types of historic buildings are ideal for conversion to modern usage. Nobody wants to see once-glorious, but now neglected, buildings, littering the country; similarly, nobody wants to see buildings that have been expensively – and extensively – restored sinking back into neglect. And there are huge problems with redevelopment, including those associated with neglect, finance, planning issues, and the requirements of Building Regulations and conservation legislation.

This forward-looking seminar took a holistic view of the considerations involved in refurbishment schemes, firmly concluding that re-use of a building is the most environmentally sustainable solution.

"The starting point is to understand the big picture, then get down to particulars"

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A right to occupy

In the second part of the series, Peter Napier examines the squatter cottages of Blakemoorgate

Cook's Cottage, one of the most well-preserved examples at Blakemoorgate

At Blakemoorgate, high up on the Stiperstones in south Shropshire, is an abandoned uplands settlement situated near the Snailbeach mine. Few of the dwellings remain, most being piles of stones, but all have evidence of an enclosure around them in which stock would have been reared and crops grown. The properties also have subterranean root stores attached to them which kept the root crops free from frost and damp through the winter.

Blakemoorgate is situated on the northern fringe of Stiperstones, some 12 miles south west of Shrewsbury. The settlement lies within The Stiperstones National Nature Reserve and the Shropshire Hills Area of Outstanding Natural Beauty. The Stiperstones is a desolate and windswept area of rocky outcrops of hard quartzite, which being resistant to weathering have remained prominent when less hard rocks have eroded away.

It is difficult to imagine why anyone would try to live in such harsh surroundings or attempt to cultivate the rock-strewn landscape. In such circumstances around 150 years ago, people, probably forced by poverty and with no alternative way of making a living, moved up to the moorland areas and built houses and small farmsteads in small settlements.

To describe these as 'squatter' settlements would be misleading. It is most unlikely that such substantially built dwellings with stone boundary walls and metalled paths and trackways could be tolerated on such a scale without the landowner's consent. They may well have permitted such settlements under licence, allowing the settlers to build their houses and improve the poor land in return for a modest rent.

There were once five small holdings at Blakemoorgate each consisting of a cottage with outbuildings and fields. All are of considerable interest.

The field systems of the settlement are still evident today, delineated by robust dykes of stones hewn from the ground, in an effort to render the ground more productive. Soil was used to cover the stones and on top mixed hedges were planted which secured the fields and provided some protection from the winds. Access between the smallholdings and cottages were by trackways also delineated by hedges on stone banks.

Water was provided by a stream from a well created by hollowing out the bog at the top of the hill in which the water collected and drained along a watercourse through the settlement. The stream ran into a pond which can still be seen today.

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The buildings were not as robustly constructed as the boundaries. Although some cottages were lived in until the 1960s, piles of jagged stones and grass mounds are all that remains of most of them. English Nature hopes to carry out repairs and reinstatements to conserve the architectural and archaeological remains and protect the flora and fauna associated with the abandoned settlement. It also aims to make the site more accessible to the public.

Cook's Cottage has stayed most intact. It is built with stone walls under a duo pitched roof covered with clay plain tiles, with a root store to the east. On the north-west side are the remains of the attached single storey outbuildings. At the rear were two detached outbuildings. One is now just a pile of stones and the other, fenced off with a stout stock-proof fence, still has some of its roof albeit this has collapsed together with most of the stone walls.

"At Blakemoorgate random rubble stone walls have disappeared in less than 50 years. Rapid action is needed if the same fate is not to befall Cook's Cottage"

The cottage comprises one room on the ground floor and two rooms at first floor level. There is evidence of a plank and timber-framed partition. A dogleg timber staircase with straight flights and winders rises from ground to first floor in the north-west corner adjacent to the entrance door. Heating and cooking is by a single fireplace on the east gable.

The walls are built with hard Stiperstones quartzite, in the form of undressed randomly shaped rubble stone gleaned from the ground presumably as a result of clearing the moorland.

Presumably the builders had scant resources. That almost certainly ruled out the excessive use of purchased materials and those that required transportation, given the difficult access to site. The only transport would have been a horse and cart, for which payment would probably be required.

Not all the dwellings at Blakemoorgate have stood the test of time

Remains of a window. Note the bars, one of which is embellished with two twists

Rita Evans who lived in the house behind her until 1950: It is now just a pile of rubble having been abandoned to the elements for the last 50 years

Lump lime would have been the main material for making mortar for walling. This would almost certainly have had to be purchased and so its use would have been kept to the minimum. The most readily available and least costly form of bedding material would have been mud mixed with water.

The clay/mud bedding would have been ideal as it could be made into a paste to bed the stones soon drying to a solid state. This material has been encountered on at least two other squatter cottages and houses in other areas. One is a 17th century judge's lodgings on the Mawdach Estuary near Dolgellau – hardly a 'squatter' cottage. Once the mud had hardened, the joints in the stones would have been protected externally by lime mortar pointing. Regular applications of limewash would have ensured the integrity of the core. Lack of such maintenance could result in the relatively rapid loss of the building, made worse as there are very few, if any, long stones built across the thickness of the walls to bond the outer skins together. Random rubble walls such as these rely on their mass, ie, all the individual stones and their bedding material acting as one, to stay upright and transfer the loads to the ground.

To ensure their stability, the walls must be thick and remain relatively perpendicular because the individual stones and bedding have little or no resistance to shear. The bedding must also remain dry: when it becomes damp or if there is any movement in the walls, the stones become unstable and want to 'belly out'. Bonding stones, where they are present, help to resist this movement.

Robustly constructed buildings such as castles and abbeys, where the stone walls were built in lime mortar and where bonding stones were present and the stones, even rubble stones, have flat parallel faces for bedding, have endured for centuries in a ruinous state without becoming completely lost. At Blakemoorgate, random rubble stone walls have disappeared in less than 50 years. Rapid action is needed if the same fate is not to befall Cook's Cottage.

The only other remaining structure with any form is the perhaps more interesting Davies's Cottage which has already begun its decline. As it is, in fact, two cottages, two families possibly joined forces in its original construction. Its rarity as an example of semi-detached cottages in a remote upland area has been highlighted by building archaeologist Richard Morriss, who comments that it deserves far greater study and understanding. This has already progressed significantly, helped by local anecdotal evidence gathered from former residents of Blakemoorgate.

It is a great shame that such historic dwellings are so easily lost and forgotten: it would be wonderful to save these remaining buildings to provide a unique education resource on our vernacular past. As the National Trust proclaims: "History matters, pass it on."

Let's hope it is not too late in this instance.

Peter Napier has his own practice specialising in historic building repairs. His clients include the National Trust, English Heritage and the Landmark Trust. He is currently working on major repairs at Usk Castle, Monmouthshire and an 18th century ironworks in North Wales. For further information *www.napierandco.com*

Book reviews

Ove Arup Masterbuilder of the Twentieth Century
Peter Jones
Yale University Press
Price £25
RICS Books product code: 16448

Reviewed by Jim Humberstone

One of the great names of the architectural and engineering world in the 20th century, Arup was a quintessential professional. His name has been a byword for excellence for more than four decades and he left his mark in all four corners of the globe.

Unlike many other great engineers, he proved to be a highly successful businessman. A startling revelation is the way he built up his practice from such small beginnings. In 1946, when the firm was set up, his office made a net profit of £1,237 on a turnover of £3,324. Some 55 years later, turnover had topped the £400m mark. It is even more extraordinary to realise that this last figure reflects the work of 7,000 staff undertaking schemes for 4,000 clients from over 100 countries.

Another intriguing aspect of the Arup story is that his initial training was in philosophy. Apparently, he never really relinquished the fascination with intellectual enquiry which had characterised his early years at university in his home country, Denmark. Not surprisingly, his move to engineering appears to have coincided with the emergence of the important firm of Christiani and Neilsen, with whom he had his first taste of professional work.

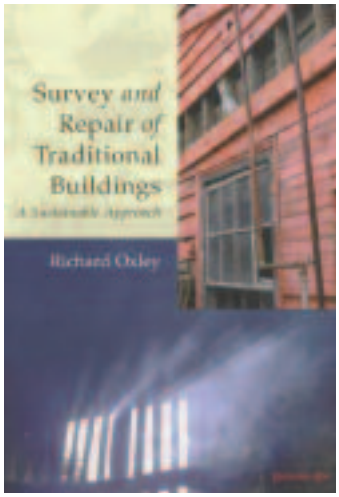
The first three decades of the 20th century represent a period of architecture profoundly influenced by the exploitation of concrete. Undoubtedly, the young Danish engineer (by now domiciled in Britain) would have been carried along on the great wave of new thinking in architecture, released by the potential of the wonderful new structural medium.

The book rightly devotes some space to these early years. It is a measure of the quality of the writing that the reader is drawn into Ove's world and can develop a good understanding of the influences which brought about his genius.

There is substantial coverage of Arup's part in the design and construction of Sydney Opera House and his relations with its Danish competition-winning designer, Jorn Utzon. The author paints a rather dismal picture of Utzon's behaviour, whose haughtiness and disinclination to get involved with specifics caused Arup great anguish. It also highlights Arup's continuing concern on the whole question of the optimum role of architects and designers and relationships with their colleagues in other support disciplines.

This review can only hope to scratch the surface of what is quite an extensive biographical study. There is a lot more to learn about the man and his work within its 364 pages. One will find even more evidence of the wide range of his skills, not least those applied to his important contributions to World War II. These included the design of bombproof air raid shelters and the construction of the D-day Mulberry Harbour.

There is much fascinating food for thought about the twin worlds of architecture and engineering generally, not just those professional fields as seen from one man's point of view. This important book can be wholeheartedly recommended to all building practitioners.



Survey and Repair of Traditional Buildings – A Sustainable Approach
Richard Oxley
£39.50 (Hardback)
RICS Books product code: 6868

Richard Oxley shows how to carry out effective assessments, taking into account a building's individual character, its need to breathe and its particular construction. He explores the causes of movement and the actions required; advocates appropriate treatments for damp and timber decay in older buildings, rather than using standard methods; and provides fully illustrated case studies showing how mistakes could have been avoided.

"This book…should be read by all those who undertake building surveys of traditional buildings" *Journal of Architectural Conservation*

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