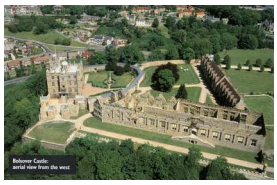
Conservation Bulletin, Issue 36, December 1999

(NB: page numbers are those of the original publication)

Sustaining the Historic Environment



Bolsover Castle: aerial view from the west

The language of sustainable development is everywhere. Phrases such as 'common inheritance', 'quality of life', 'future generations', or 'sustainable conservation' are found in many different contexts, from countryside conservation to urban regeneration, from wildlife to heritage conservation, and from local authorities to government departments. They are central to English Heritage's new Strategic Plan for the period 1999 to 2002. But what do these ideas mean in practice for the historic environment?

The central idea of sustainability is that we should ensure that the activities that meet all our social and economic needs do not irreversibly damage the environment on which they depend. Sustainable development requires that conservation and economic development should not stand in opposition to each other, but should work together towards common aims. It was initially applied to 'green' conservation in order to manage the impact of pollution, waste disposal, and energy use on the natural environment, yet the philosophy is just as relevant to the heritage. Two years ago, English Heritage published *Sustaining the historic environment*, which explored the application of 'sustainability' to the heritage. Since then, sustainability has been a central influence on almost every aspect of our work. At the most basic level, understanding the connection between heritage and 'green' sustainability has led us to build on the strong connections between the natural environment and our heritage. For us, the idea of heritage now extends beyond individual monuments to encompass the complex pattern of buildings, landscapes, and sites around us – in other words the historic environment as a whole. This is comparable to ecological concerns for habitats as much as individual species, which in turn influenced the move in natural conservation away animals in zoos towards the conservation of the environment. The concern for a wider historic environment now lies behind much of our work in English Heritage, from our advice on designation through the management of sites to our

educational work. This is why we are helping local authorities throughout England to deepen their understanding of the whole historic environment by carrying out historic characterisation projects.
Another plank of sustainability is the recognition that conservation is a matter of concern to everybody, and not just to the scientific world. It contributes directly to the quality of life. We must articulate the role of the historic environment in the quality of human life: the buildings and landscapes around us contribute to our sense of place and belonging; the materials and patterns of construction reflect traditions and the development of local distinctiveness; the archaeological dimension places us in time. The historic environment encompasses cultural, educational, economic, aesthetic, spiritual, and community values. As we have learnt through managing historic towns, successful conservation depends upon working with these other values as well as with our more traditional historic ones.

Regeneration

In August, English Heritage published *The heritage dividend*, a study of the economic impact of funding for conservation. We know that our grants act as an initiator for private and public sector investment; they lead to the creation of new jobs, new homes, and new commercial floor space. For inner cities in particular, the conservation of good existing buildings and spaces has been recognised as integral to successful regeneration. This is one of the many ways in which the conservation of the historic environment has become the basis for – and not a barrier to – new economic life, life that brings sustainable uses for historic buildings, assuring their long-term futures.
Our amalgamation with the RCHME has created a strong centre to the new English Heritage, greatly enhancing our capability for understanding and explaining the historic environment. Sustainable conservation depends upon making decisions based on the best possible information about the past at every level, from the detail of an individual building to the wider character of the landscape. For the first time we have the resources to bring conservation and understanding closer together.

The longer term view

Sustainable development also requires a long term view, anticipating future threats and promoting forward-looking national and regional strategies. To do this we need an effective model of the historic environment, which will help us to understand what is happening to it, and thus how best to use scarce resources. The Buildings at Risk Survey (BAR) has given us a national overview of Grade I and II* buildings at risk and the Monuments at Risk survey has for the first time shown us what is happening to monuments. Initiatives such as these help us to target our policies, our own resources, and the help we give to others – both financial and in specialist expertise.
Agenda 21 – the document that set the framework of action for sustainability – emphasises that conservation must be both top down and bottom up. In the long term, conservation depends on partnership with organisations at a local, regional, and national level. Our recent programme of integrating our frontline work of advice, grant aid, and management of our properties in nine new regional offices across England has put English Heritage in an excellent position to work with the new emerging regional agencies – and just in time. In April 2000 we will be taking over the Heritage Grant Fund from the Department for Culture, Media, and Sport and will be able to support directly the amenity societies and other heritage organisations in their essential work at a local level. Partnership, both with local authorities and with the many other bodies at national, regional, and local levels involved in conservation is essential.
Finally, conservation is for people. Unless the public take an interest in and engage with the conservation process, it cannot be sustainable. We will be working hard to achieve this directly by improving access to our own monuments and by exploring new ways of

creating better intellectual access to the historic environment, through education and information technology. But we have a much wider role in ensuring that people understand and value the character and diversity of the built environment in which they work, live, and play. If they value it, as many already do, how much more likely they are to care for it.

Social impact

Sustainability is more than a new buzz word – it embodies a process that requires us to approach conservation in a new way, something that now lies at the heart of English Heritage's strategy. Of course there is much more to be done – we have only just begun to consider the impact of the heritage to social exclusion; we need to find better ways of working with the cultural diversity in England today; the contribution of the historic environment to the quality of life must be better articulated and valued. It has proved difficult to develop useful indicators for measuring sustain-ability outputs for the heritage, although we have been working with DETR to produce an indicator based on our Buildings at Risk Register as one of the soon to be published national set of detailed sustainability indicators.

There remains in some circles a fallacy that sustainability is only relevant to the natural environment. Our new Strategic Plan 1999–2002 makes it very clear that sustainability means very much more than this to us – it means taking a hard, critical look at the effectiveness of what we do and how we do it in terms of the future needs of the entire historic environment and in terms of how the historic environment can be used to make a unique and essential contribution to the future. It is a challenging agenda and we cannot achieve it alone. It is one that can and must be pursued if the historic environment is to be valued as a key part of the Government's wider agenda for sustainability and social and economic health.

Pam Alexander

Chief Executive

Cover of Discover your heritage: 1999 Time Trails map

New Chairman for English Heritage

On October 28 Chris Smith, the Secretary of State for the Department of Culture, Media, and Sport, announced that Sir Neil Cossons is to be the new Chairman of English Heritage when Sir Jocelyn Stevens retires at the end of March 2000.

Sir Neil has also been appointed as a Commissioner prior to becoming Chairman. He has been Director of the Science Museum since 1986 and retires from that post in 2000. He is known to many of us from his time as a Commissioner of English Heritage (1989 to 1995) and from his 14 years as a member of the Ancient Monuments Advisory Committee. He has been Chairman of our Industrial Archaeology Panel since 1990.

Sir Neil says that he is 'absolutely delighted' to be joining us. Chris Smith has paid tribute to his 'exceptional leadership skills, experience, and influence in the heritage, museum, and conservation fields', and Sir Jocelyn Stevens described his appointment as 'very good news for English Heritage.'

Pam Alexander, Chief Executive, welcomes Sir Neil's appointment and has praised his huge enthusiasm for the heritage and his recognition as an international authority on his specialist field of industrial archaeology.

She wishes 'to welcome Sir Neil most warmly to English Heritage.'

Editor

Building Conservation Masterclasses

In 1998 the programme of Building Conservation Masterclasses, developed by English Heritage at Fort Brockhurst, was re-established at West Dean college. Course Developer Judith Leigh describes the first year of operation.

West Dean College, founded in 1971, has a long tradition of practical conservation teaching and runs post-graduate diploma courses validated by the University of Sussex in the conservation of ceramics, books and manuscripts, fine metalwork, clocks, and historic furniture. More recently a series, *Professional conservators in practice*, of mid-career training courses in artefact conservation has been introduced. When English Heritage had to take the hard financial decision to close their training centre at Fort Brockhurst, West Dean College, some 20 miles to the east, was an obvious choice to carry on the programme of practical training in building conservation, which it had successfully developed during the previous three years.

Demonstration of mortar mixes for masonry conservation, West Dean College

Edward James, the last private owner of West Dean estate, was in the first half of the century a great patron of the arts and especially of the Surrealists. He amassed a huge collection of paintings, the later sale of which helped finance the Foundation, which he personally established in 1964. His aims, which set the terms of reference for the college, were to encourage art and craftsmanship, and in particular the use of traditional materials and the survival of traditional skills. Furthermore, some nearby fields were provided as a site for the Weald and Downland Open Air Museum, now a separate institution, which has recorded and re-erected, with increasing skill, understanding, and precision, doomed buildings from the region. As the Museum also has long experience in survey documentation and in teaching the repair of timber-framed buildings, an early partnership in presenting the Masterclasses was established, with some courses taught on that campus, providing the unique teaching resource presented by the re-erected buildings at the open air museum.

New facilities

The Trustees of the Edward James Foundation voted a generous capital sum to convert a large mid-nineteenth century dairy building, originally a covered cow yard of the Estate's Home Farm, into a conservation training centre. Here a suite of rooms has been created comprising a large lecture room, an extensive workshop, and a laboratory.

The workshop houses the 'ruinette', the unique, purpose-built masonry structure incorporating many of the defects inherent in historic masonry on which students can experiment and practice remedial techniques, with the added advantage of not putting historic fabric at risk. This was a feature of the Fort Brockhurst courses and 'ruinette mark 2' was designed and built by the same team that created the original: John Ashurst and Colin Burns. It was thus recreated in the light of experience and incorporates additional teaching elements in the form of faults to be rectified. These include areas of eroded and damaged stone, poor pointing, masonry voids, unsupported masonry, exposed corework, and unconsolidated wall tops.

Practical exercise in lime pointing on the ruinette, West Dean College

A final stage of construction involving a ‘gatehouse’ is planned. The centre was opened and the new Masterclass programme officially launched by Sir Jocelyn Stevens, Chairman of English Heritage, in September 1998.

Masonry recording exercise on the ruinette, West Dean College

The Master Classes

The courses are designed for a wide range of disciplines within the conservation profession: craftsmen, specialist contractors, construction managers, conservation officers, architects, archaeologists, engineers, surveyors, conservators, and, of course, the staff of the government historic buildings agencies (English Heritage, Historic Scotland, and Cadw), as well as the independent National Trust. This mix has always been a feature of the Masterclass programme and one of its particular strengths, as students value being able to pool experience and learn from each other’s specialisms as well as from the tutors. The mix also encourages the formation of professional contacts.

The courses are intensive over 3–4 days to allow hard-pressed professionals to make best use of their time. The College is residential, and therefore evening teaching and discussion sessions are an option that was not available at Fort Brockhurst.

Laboratory analysis of mortar constituents, West Dean College

A number of the current courses are based on those developed at Fort Brockhurst, but the syllabus of each is regularly reassessed and amended in the light of experience and professional developments. New courses are being designed, and their assessment for formal validation by English Heritage is co-ordinated by the Historic Buildings Conservation and Research Team. A requirement for validation is that the programme has a substantial practical element, and therefore each syllabus comprises a mix of lectures, demonstrations, and practical exercises, enabling students to experience first-hand the tools and materials of the trade. The teacher:student ratio is generally 1 to 3 to allow for detailed personal supervision; only 12 students are taken for each workshop-based course. An Advisory Panel comprising representatives of each partner organisation – West Dean College, English Heritage, the Weald and Downland Open Air Museum, and consultant Professor John Ashurst – approves each syllabus and oversees the programme.

Thus the programme aims provide a mix of core courses, for which there is a continuing demand, and new courses in response to perceived needs. The former category includes *Conservation and repair of stone masonry, Conservation and repair of timber, Conservation and repair of traditional brickwork, Conservation and repair of masonry ruins, Mortars for conservation*, and *Plasters and renders in conservation*. The Panel believes that there is an urgent need for practical training opportunities in these basic materials.

All courses provide in illustrated lectures the historical context of the material in question, identify traditional techniques and materials, assess causes of failure, and review methods and options for consolidation and repair. Practical sessions incorporate laboratory analysis to aid and inform the choice of materials for sympathetic repair. In the Workshop, masonry courses include practice in cutting out defective work, designing and experimenting with mortar mixes and grouts, placing mortar using appropriate tools, and creating appropriate finishes.
All courses aim to provide an update and assessment of current conservation thinking in the field and end with practical advice on specifications and costings.

Specialist courses

More specialist courses are also taught, with the aim of providing a synthesis of current knowledge, practice, and research. These include: *Stone treatments*, which teaches the conservation of delicate stone surfaces through the application of specialised methods and materials, both organic and inorganic, including the results of latest research; *Conservation engineering* is designed for those wishing to gain a new perspective in applying engineering principles to the conservation of historic structures and provides an overview of approaches and techniques; *Cleaning masonry buildings*, a new course, was designed to accompany the forthcoming issue of a new BS Code of Practice on Cleaning and Surface Repair and provides an opportunity to see demonstrations of, and to try out on practice walling, all currently available techniques; and *Conservation and repair of flint buildings*, another new course, is designed to encourage high standards in the treatment of this region's building material.

Appropriately named

The name Masterclass was chosen to reflect the fact that the course leaders and tutors are indeed masters, leaders in their fields, with wide and long experience, providing high-level instruction at the cutting edge of current thinking and knowledge. Many students come with difficult professional problems to solve and as the course leader and principal tutor are on hand for the entire course, the breaks and evening sessions provide opportunities for discussion and for obtaining individual advice. For the practical work, the tutors guide the work of each student individually.
The Fort Brockhurst courses attracted participants from a wide range of building conservation interests from all over the world, and the new programme has done likewise. It is recognised that students whose costs are not covered by their organisation have to make a substantial financial commitment to attend and it is hoped that a limited number of bursaries for such students will be available later this year. The course syllabuses are, one at a time, receiving the approval of CITB, which allows associated firms to claim a proportion of the training costs. Finally, the attendance certificates received by each student can be an important element for satisfying Continuing Professional Development requirements.

Bespoke courses

The Workshop and the Masterclass team are also available for bespoke courses, a number of which have already been run by English Heritage for its architects and surveyors. Other organisations are requesting programmes tailored to their special needs, for example the first course on *Conservation plans* for a specialist group of buildings – lighthouses.
Looking ahead, the programme for 2000 will include a mix of core courses and courses new to the West Dean programme. The latter include a more specialist masonry course, *Conservation and repair of ashlar masonry*, and a course looking at historic buildings in the context of their environment, called *The ecological management of historic buildings*

and sites. Further new courses will include *Conservation of architectural metalwork* and *Architectural surface finishes*. In the future the possibility of a qualification in practical building conservation through credit accumulation and back-up study is being explored.

Designing a mortar mix for masonry conservation, West Dean College

The first full year has been encouraging, and has provided the essential training in practical building conservation originally provided by English Heritage. It has provided training both for English Heritage staff and for other conservation professionals, and it is hoped that this new partnership will continue to develop while retaining the values of the original Masterclass programme.

Judith Leigh

Building Conservation Masterclasses Course Developer

Courses for Winter 1999/2000

Conservation engineering
BC 2D5, 7–9 December 1999,
Ian Hume and Peter Badcock,
residential cost £350

Conservation and repair of ashlar masonry
BC 3DII, 18–21 January 2000,
John Ashurst and Colin Burns,
residential cost £495

Conservation and repair of plasters & renders
BC 3D12, 22–25 February 2000,
John Ashurst and Colin Burns,
residential cost £495
For further information, incl non-residential costs, please contact the Building Conservation Masterclasses Coordinator: tel 01243 811294/811301, fax 01243 811343, e-mail: westdean@pavilion.co.uk

Reroofing Pitchford Church

The grant aided recovering of the roof at St Michael's and All Saints church, Pitchford, near Shrewsbury required special Harnage slates. Here Chris Wood of BCRT describes the work and lessons learned.

The nave roof of St Michael's and All Saints church, Pitchford, near Shrewsbury has been recovered in the local Harnage stone slates after a new quarry was opened to provide a supply of this rare material. The work was the culmination of four years of effort, which included finding a source of new stone, obtaining planning permission to open the quarry, and finding an operator to quarry the stone and produce the slates. The project also required a detailed survey of the old roof to see why it failed and to help design the details of the new roof.

Harnage stone revived

This is thought to be the first time that Harnage stone had been quarried for more than 60 years. Commercial production ceased more than a century ago. The stone was once actively exploited for roofing, but with cheaper imports of Welsh slates and clay tiles it rapidly fell out of production and there are only a few more than 20 buildings still clad in this unique and distinctive material. There is nothing quite like this stone anywhere else in the UK, for Harnage slate is actually a shelly or calcareous sandstone, which splits quite easily, and gives a variety of different thicknesses.

The lack of supply of new local material is a problem in many regions in England, where stone roofs are being repaired with different products imported from other parts of the UK or from abroad. Worse still is the fact that roofs are regularly cannibalised (sometimes stolen!) to provide a supply of second-hand material. English Heritage were keen to see St Michael's repaired in Harnage stone as their *Roofs of England* campaign was actively trying to help rejuvenate local stone slate industries. A great deal of information has been learned from the Pitchford story, which it is hoped will be useful in other areas.

History of the church

St Michael's is a Grade I listed church, and lies some 50 metres from another Grade I building, Pitchford Hall, which is also roofed in Harnage stone. Lack of new material resulted in recent repairs to the Hall being carried out in a variety of different stone slates. The church retains much of its original twelfth-century fabric despite being altered over the centuries. It is not known if the original church roof was clad in Harnage stone; the first written mention of Harnage slates occurs in the mid fourteenth century but it is likely that this prestigious building would have retained its stone slates, at least while there was a supply of new material.

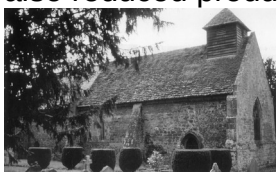
Earlier this century the chancel roof was repaired in plain clay tiles. In the 1930s the nave roof was stripped and some of the old Harnage slates were redressed and reused, but the bulk was quarried from Acton Burnell Estate nearby. Correspondence at the time describes this as slow and 'painfully costly', as the beds of stone lay in awkward positions and a great deal of overburden had to be moved. The mounting costs dispelled hopes of replacing the tiles on the chancel with stone. Good quality local oak was used for cleft laths, pegs, and new rafters. Unfortunately, the reslated nave roof, which should have lasted at least a century, started to leak after little more than 50 years and it was clear from the outside that many slates were no longer held onto the laths.

By the 1990s, the Parochial Church Council (PCC) was faced with the expense of reroofing in a material that had apparently failed prematurely and, not surprisingly, there was pressure to replace the whole of the nave roof with machine made tiles to match the chancel. English Heritage agreed that the works would be eligible for grant aid provided that this was done in Harnage stone. If it proved impossible to produce the new stone then it was agreed they would not oppose the use of tiles.

Finding the quarry

English Heritage commissioned its consultant Terry Hughes, who had been leading the campaign, to investigate all the potential sources of Harnage stone and carry out a

feasibility study to assess potential demand. Together with David Jefferson (consultant geologist) they identified 16 former quarry sites, later narrowed down to two. Consent from the landowners was obtained for excavating trial holes a few metres in depth and samples of rock were taken for analysis and testing to make sure that they would split satisfactorily. The selected site at Park Wood on the Acton Burnell Estate had a number of advantages. Not only was there an adequate supply of fissile (easily split) stone at reasonable depth, but the site was also on a hill hidden by trees. The comparatively small scale of the operation meant that the occasional vehicle movements would have little impact on the local roads and villages. These were important considerations for the County Council's minerals planners, who had to balance the needs of the built environment (historic buildings) with those of the natural environment. The fact that the contractor who would win the stone planned to remove the rock and dress the slates at his works in Wiltshire was also beneficial, as it reduced the amount of noise and general activity at the quarry. It also reduced production costs.



The state of the nave roof before repairs began

The south slope of the roof before repair

The planning permission stipulated times of working, but the Acton Burnell Estate also required the quarrying to end by October because the land provided valuable pheasant covers and the lucrative shooting season was scheduled to start in November.

Winning stone and dressing it

Taking the decision to open the quarry was complicated. English Heritage would be grant-aiding most of the costs, but it was still the PCC, through its new architects, Arrol & Snell Ltd, who would issue instructions. Everyone had to be satisfied that sufficient funds were budgeted to complete the job. The problem was, that there were a large number of uncertainties. For example it was not known exactly how much stone was needed for the new roof. Reasonable estimates could be made, based on the average weight of slates found at the church. How much of the old could be reused and how much new was needed, would not be known until the roof was actually stripped and individual slates inspected. Most worrying was the possibility, albeit remote, that the quality and quantity of new material expected following the trial excavations might not live up to expectations, or that the wastage would be far greater than anticipated.

In order to move the project forward English Heritage accepted that they would have to be directly involved in the production of materials, so the amount of grant was increased to cover the 'worst case' estimates, and it was assumed that new stone would be required for the whole roof. Any unused new slates would become theirs for use on other buildings. Getting this procedure in place meant a delay, but fortunately all parties reacted quickly and the instruction was issued to The Completely Stoned Company to begin quarrying in October. Unfortunately, Shropshire experienced the wettest October since records began in 1841 and the site became almost inaccessible to vehicles. The minerals planners, however, were understanding and accepted a different phasing of the work. Even the pheasants quickly grew accustomed to their new neighbours, so the Estate was happy to allow quarrying to continue into November.

Although at its peak three excavators were used, most of the work was still done by hand. Indeed hand shovels were used to expose the first area of good fissile stone, which, ominously, was some four metres below ground. As quarrying moved up the hill, however,

production improved, and on average five tonnes of stone were produced per day. As the rock splits best when wet, it was initially split and roughly dressed and kept wet until dispatched. When frost threatened the stone was covered with polythene. The quarrying was successful, with far less wastage than expected, and plenty of large slates were produced, which the survey later showed proved be critical.

Recording the old roof and analysing the causes of failure

Moving the slates took longer than expected because the rains had turned the steep access track into a quagmire. Nonetheless, the instruction to stop work was given at the end of November, when enough stone had been won to cover the whole nave roof. Work continued in order to win enough stone to complete the reroofing of Pitchford Hall.

Once the stone arrived at the contractor's works in Wiltshire it was roughly cut to size with a mechanical saw and then hand dressed to provide the traditional finish. The final cost of the stone was £640 per ton, which came midway between the highest and lowest estimates.

The new slates with some reused from the old roof

Splitting stone in the quarry – still mainly done by hand

Investigating the failed roof and design the new

Terry Hughes carried out a thorough survey of the nave roof to find out why it had failed. This required the erection of scaffolding inside and outside the church and a two metre strip of slates was removed from each side. Every course was measured and recorded. The slates were generally in good condition and it was expected that most of them could be reused; but the survey revealed that most of the oak pegs and many of the laths had completely rotted. This was mainly owing to the excessive amount of mortar bedding that had trapped water and restricted ventilation. This had in turn encouraged the growth of plants, especially ferns, whose roots filled the space between slates and added to the dampness of the roof. Small slates too low down on the roof (80% were 12 inches long or less) meant that there was an insufficient overlap of slates to keep water out.

Various approaches were considered for the new roof, including a return to the traditional method of hanging the slates by oak pegs on split laths. Because of a number of complications, however, it was decided that the roof would be gap-boarded even though this reduced the flexibility for setting out the random courses of slate, because the nails could coincide with the gaps. The slates were nailed through two layers of felt over the boards and directly over a ventilated rafter space. (A full description of the works appears in *English Heritage Research Transactions Vol 2. Stone and Mortar)*.

Much has been learned about the issue of opening a new quarry to supply stone slate and more quarries will need to be reopened if these distinctive and important features of our heritage are to be retained. The cost of stone roofing is expensive, but it must be remembered that a properly designed roof should last at least a century and most of the

slates should be capable of reuse. It is also one of the most sustainable of materials and uses little energy to produce.
St Michael's church has acquired a new stone roof using the same materials that have most likely adorned the building for many centuries. Reroofing the chancel roof in stone was also considered but dismissed because the present roof functions well. Now that a source of slates has been established it should mean that buildings roofed in Harnage stone can be repaired without having to import different stone or to cannibalise another building. Perhaps in the future we might see the roofs of some important buildings, which have lost their Harnage slates over the years, again display this unique material.

Chris Wood

Building Conservation and Research Team

New Grants Scheme

English Heritage's Grants for the Repair and Conservation of Historic Buildings, Monuments, Parks and Gardens: 1999–2002

Schemes brought together

The revised Historic Buildings, Monuments and Parks and Gardens (HBMPG) grant scheme was launched by our Chairman, Sir Jocelyn Stevens, on 20 September at the Royal Society of Arts in London, following a wide consultation process, when he announced English Heritage's new grant priorities. For the first time we have brought together into one scheme our grants for historic parks and gardens, for monuments, and for our finest and most architecturally significant buildings.
Grants under this scheme have covered everything from the repair of our greatest houses and their associated gardens, through ruined castles and abbeys, to nationally important public buildings, and monuments of the Industrial Revolution such as collieries and railway viaducts. They have gone to private owners, commercial organisations, public bodies not directly funded by the Treasury, local authorities, and Buildings Preservation Trusts and other charities. Grant aid under the scheme is targeted specifically at the owners of Grade I and II* secular buildings, parks and gardens, and scheduled ancient monuments.
Between 1999 and 2002 we plan to offer more than £40 million in grants for individual buildings, monuments, and parks and gardens. The new scheme will provide an invaluable tool for EH in developing an interdisciplinary approach, looking at monuments, buildings, and landscapes in their full context in order to provide a more effective way of supporting and managing our historic environment.

Allerton Park, North Yorkshire

Finchingfield windmill, Essex

Targeted approach

The new grant criteria adopt a more targeted approach for funding towards four priorities, which after careful consideration of heritage opportunity and needs against the wider

economic social and political contexts, have been agreed by our Commissioners for the next three years. The four priorities for grant-aid for 1999–2002 are:
i For urgent repairs to buildings and monuments at risk. Buildings and structural monuments should be included or eligible for inclusion in our Register of Buildings at Risk.
ii Grants for historic parks and gardens where there is a significant risk of important historic landscape features being lost
iii Grants to private owners, both to the great ‘treasure houses’ and particularly to smaller houses that have been in the same family ownership for at least 30 years, where the project involves work urgently necessary to keep the building structurally stable and watertight (principally repairs to roofs, rainwater goods, and associated works)
iv Grants for repair projects with significant social or economic regeneration

Levens Hall, Cumbria

Sherrif Hutton Castle, North Yorkshire

Castle Howard, North Yorkshire

Our Buildings at Risk Register has provided a firm basis for assessing our priorities, as has our previous work on area and site specific regeneration schemes. We have also been very aware of the special needs of privately owned houses whose owners lack the resources to support ongoing maintenance and repair.
Historic parks and gardens are an important but vulnerable part of our heritage, with many parklands now mature or over-mature with tree cover, lakes, garden structures, and buildings in a critical state of repair. Restoration of such parklands can be a daunting and complex task so we hope to make more grants available for this area of our work.

Three main aims

In devising the grant scheme we had three main aims. The first was to target our limited resources where the need is greatest, setting clear priorities for the next three years. Secondly, we wanted to increase the flexibility of our previous grant scheme. The new scheme has been designed so it can be readily adapted to the changing needs of the historic environment. It can also respond rapidly to the developing recognition of the importance of heritage conservation within policies for sustainability and regeneration. Thirdly, we sought to improve our service to our many different customers by providing a quicker and more ‘transparent’ system for considering grant applications. With this in mind, we have made special efforts to produce a new style of grant literature, which we hope will be a significant improvement on previous grant documentation. The new grant documentation gives detailed guidance on submitting applications for grant, our grant assessment criteria, and our conservation standards and philosophy.

The future

Over the next two to three years we intend to work with our partners to refine the scheme further by, for example, making the best possible use of the opportunities provided by information technology including the development of our Website.

Samantha Bravo

Business Process Team, Department of Conservation

For further information please contact: Paul Hoppen – Assistant Director, Business Process Team on 0171 973 3837; Rm 322, Savile Row, London W1X lAB.
Copies of the brief introductory leaflet, the guidance notes, and application form are available from your English Heritage Regional Office or from our Customer Services Department on 0171 973 3434.

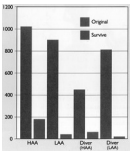
Anti-Aircraft Gunsites – Then And Now

The Monuments Protection Programme (MPP) has extended its recent work on twentieth-century defences to establish not only what was built, but also what survives and why. Affording protection to the few remaining sites will be the next stage. Here Mike Anderton and John Schofield describe progress with this national survey.

Since 1994 the MPP has been undertaking a national review of twentieth-century defences, from airfields to air raid shelters, from Cold War structures to anti-aircraft gunsites. This project has multiple aims: to develop an understanding of the subject, to present the results to a wide audience, and to ensure that some sites are preserved for the benefit of future generations. The first phase of this work is archive based, using sources held at the Public Record Office to provide national site distributions, as well as typological and chronological frameworks based on original design drawings, and to present the historical context in which England's defence provision was developed and used during the twentieth century. This work, undertaken by Dr Colin Dobinson, has been completed (see *Conservation Bulletin* **27** *and* **31**).
Since the previous reports on this project there have been several significant developments:
the archives-led work was extended to cover Scotland, Wales, and Northern Ireland (funded by RCAHMS, Cadw, and DoE Northern Ireland), this work undertaken by Neil Redfern
the project was presented alongside other related initiatives at an English Heritage seminar, and the proceedings published as *Monuments of war: the evaluation, recording and management of twentieth-century military sites* (see *Conservation Bulletin* **35**)
the MPP commissioned Aerial Survey (originally RCHME, now English Heritage) to undertake a second phase of the project: to check – for selected monument classes – whether sites identified in the archives have survived, and to what extent, with a view to determining appropriate management action

A Heavy Anti-aircraft gunsite near Bristol (1946). As well as the emplacements and control building, this picture shows the wide range of associated structures that normally accompany these gunsites

Maps showing the distribution of Heavy Anti-aircraft gunsites in England in 1945 (left, after Dobinson) and 1998 (right)
Maps by Mike Anderton
This latter study has produced some interesting and useful results which will now lead to the first scheduling recommendations to arise from this systematic review. Following a short pilot study by Susan John, this work has been undertaken by Mike Anderton. Here some of the results from this project are described.



Graph showing the comparison between gunsites as built and those surviving in some form today

Methodology

Having obtained from the archive survey details of sites as *built*, an assessment of survival was needed. To achieve this several methods were adopted, dependent upon site type: Cold War structures were the subject of a detailed ground survey by our field survey teams; anti-invasion defences are now the focus of the Defence of Britain Project; and for airfield defences there is the expertise and extensive records of Paul Francis and the Airfield Research Group. But for anti-aircraft sites, bombing decoys, coast artillery, and radar establishments, aerial photographs and modern map cover were used to obtain this information.
The process involved checking each site identified in the archive sources, first on modern maps, to establish whether the distinctive arrangement of buildings could be seen. Recent photographs were then checked for more detailed information on survival and condition. Because of the size of the task and the number of sites involved, photographs could not always be checked, and we relied solely on maps in some cases, for example where built structures would have dominated the site and where the maps suggest these no longer exist. Equally, we relied more on photographs for such things as bombing decoys and Light Anti-aircraft sites, many of which only ever consisted of slight earthworks.
All sites were graded on a five-point scale, ranging from complete survival of components and layout, as identified in design drawings and specifications; through partial survival, to complete removal. There was also a place on the scale for sites where both maps and photographs proved inconclusive and where field checking was needed. The work also recorded current land use, to establish how sites may have been removed.

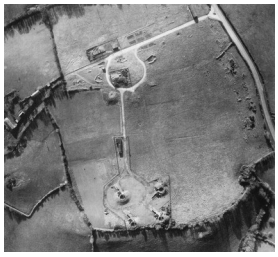
Results

The results provide a rare insight into what the recently published Monuments at Risk Survey describes as ‘wholesale monument loss’, measured, almost uniquely, against knowledge of the original population of a monument class. We now have accurate records for what was actually built – the original whole population – *and* what now survives; we know the land-use history, and for a sample of sites we will soon have information on when sites were removed. Together this will enable us to measure decay to an unprecedented level of detail. As such, this study may have significance in helping us towards understanding change among monuments of earlier periods for which we never have evidence for the original population, and where measuring loss is more subjective.
Particularly surprising, given the scale of their construction, with concrete emplacements, control buildings, and domestic camps, is the low number of surviving Heavy Anti-aircraft (HAA) gunsites: only 57 (5.8%) of the 981 constructed during 1939–45 are revealed as either complete or near complete, though a further 119 (12.1%) have some remains present. In total 81.4%) of HAA sites are recorded as having been removed, mainly the

result of suburban development (in 40% of cases), and of the return of land to agriculture (43%). Of the 192 sites selected after the war to be kept in commission until 1955 as part of the so-called Nucleus Force, 32 (16.7%) survive as complete or near complete examples. This figure contrasts with the 5.8% of total HAA sites surviving in this condition. So, not surprisingly, retention as part of the Nucleus Force has significantly aided preservation.

Light Anti-aircraft (LAA) sites were less substantial, with most amounting to little more than ground level fieldworks, either improvised locally or built to design specifications. Other sites were simply roof-mounted guns, while the most substantial structures were concrete 'Bofors towers', of which records suggest 81 were supplied for use. With only a few exceptions these LAA sites were small and slight, and this is reflected in the low survival rate. Of the 966 examples recorded in archive sources, only three (0.3%) were revealed as complete or near complete, and a further 42 (4.3%) as having partial remains (these figures exclude airfield defences, which are the subject of a separate review). In all, some 92% are recorded as destroyed, but here more as a result of suburban development (in 53% of cases), with agriculture accounting for 22% of loss.

Operation *Diver* was the name given to British measures to combat attacks from the German flying bomb, and between 1944 and 1945 *Diver* employed heavy and light anti-aircraft guns, balloon barrages, fighter aircraft, bombers, radar, visual early warning, and intelligence to meet its aims. Confined to the south and east coasts of England, *Diver* anti-aircraft sites include many ephemeral works, and all sites were temporary, ranging from occupation for several months to just two days. The most substantial sites were those built later, around the coast from the Thames to Flamborough Head. Most of these were provided with extensive domestic camps, metalled roadways, and other structures. By contrast the earlier examples in Surrey, Sussex, and Kent consisted almost entirely of portable equipment and accommodation, with surface modification limited to minor earthworks for slit trenches and gun emplacements.



A Heavy Anti-aircraft gunsite near Plymouth, as it survived in 1989. Here the emplacements, access roads, the domestic camp, and additional structures can still be seen. The site has since been removed.

This variation in scale is again reflected in the rates of survival. Of the 1190 *Diver* sites identified in archive sources, only nine (0.8%) are complete or near complete, and 77 (6.5%) have partial remains. Not surprisingly, HAA *Diver* batteries survive better than LAA, of which no sites survive complete or near complete. There is regional variation too: the greater permanence of the east coast sites means that these survive better than examples in the south. For HAA batteries 4.8% of the 187 in the Coastal Gun Belt (Kent, Sussex) survive in some form, contrasting with 28% of the 81 sites on the *Diver* Strip (Essex, Suffolk). In all 90.7% of *Diver* sites are recorded as destroyed, the result of returning land to agriculture in 60.5% of cases.

In addition to recording monument numbers, and monument loss for each of these classes, the project also enables us to explore the decay of individual sites, and the vulnerability of their separate components. Over time the gun emplacements of HAA sites will survive better than the domestic sites even though the latter are more suited to reuse, for example for agricultural storage.

Protection and future work

Having established the original distribution of these gunsites and their typology, and having subsequently established what survives and in what condition, we can now begin to plan their future management. There is some urgency about this, given their vulnerability to development schemes and their removal in the name of landscape enhancement. Visits will begin in the next few months to those gunsites identified as potentially of national importance, some 160 in all, amounting to 5% of the recorded total. As for future work, we will:

concentrate initially on protection, both of the outstanding survivals, the rare and the unusual, the typical and the commonplace

look further at destruction rates to establish not only why, but when the majority of these sites were removed

produce a final report on the aerial photographic study for academic publication; and disseminate the results of the archive study to a wide audience

Mike Anderton

Aerial Survey

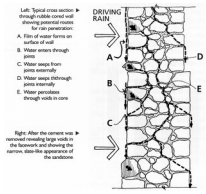
John Schofield

Monuments Protection Programme

Challacombe Tower Revealed

For nearly two years the medieval tower of H Trinity Church, Challacombe, north Devon, has been covered in sheeted scaffolding while repairs were carried out. The removal of the scaffolding earlier this year revealed a dramatically different sight. Chris wood reports.

Challacombe Church: the tower in 1995



Typical cross section through rubble cored wall showing potential routes for rain penetration:

After the cement was removed revealing large voids in the facework and showing the narrow, slate-like appearance of the sandstone

Rendering over the repaired stonework has restored the medieval tower of Holy Trinity Church, Challacombe to what it might have looked like, certainly up until the middle of the nineteenth century. The grant-aided work has been closely monitored by English Heritage so that lessons can be learned about dealing with the problem of ‘damp towers’ that afflicts so many churches, particularly in the west country.

There has been a church on the site since the Norman Conquest, although the present tower is thought to date from the early fifteenth century. The nave and chancel were

largely rebuilt in the 1850s but from the records it appears that nothing was done to the tower. Close investigation from a scaffold in 1995 revealed traces of render under the string courses and on the buttresses, so it appears highly likely that the tower had been rendered up to the nineteenth century, when it became fashionable to remove these protective coatings and reveal the masonry.

Damp towers

The reasons that so many church towers are damp vary, but the main reason is driving rain. During the initial survey it was interesting to observe what happened during heavy showers. At ground level the rain appeared to be falling gently and vertically. At the top of the tower the wind was strong and the rain was hitting the masonry horizontally. On exposed sites, such as here on the edge of Exmoor, it is not unusual to experience days of continuous driving rain. What happens to the masonry is shown in the sketch figure.
In theory most of the rain will run down from the face of the stones, but inevitably some moisture will be driven inwards and this will be absorbed into the render, mortar joints, stonework, and core. When the rain stops, this moisture should gradually dry out by evaporating at the surface, aided by the effects of sun and wind. Any moisture finding its way through the core should be absorbed within the joints, stone, and plaster on the inside walls of the church and gradually evaporate. Unfortunately, this often does not happen because masonry has eroded over the centuries and weatherings fail to shed water efficiently, or the church has suffered from inappropriate repairs or alterations.

Fern growth

At Challacombe a prodigious amount of water passed into the tower. The extent of the fern growth in the inside reveal of the west window and the mould growth on the plaster at the junction of the tower and nave provided ample evidence of this. The lead roof of the tower was in good condition, but inspection of the external elevations after a heavy shower revealed damp patches where water was flowing out. Bulges in the external face suggested that there may be wash-out of the core, ie mortar particles and fines being gradually washed down by the water and building up behind facework. Far more problematical was the repointing that had been carried out some years ago in a hard cementitious mortar, much of which had been smeared over the face of the stones. Cement pointing such as this tends to crack, which lets in more water, but is also too dense and impermeable to allow moisture to evaporate back out rapidly.

The ferns growing inside the reveals of the west window in the tower before the cementitious mortar was removed from the outside

The repair work

Holy Trinity is a Grade II* listed building and therefore eligible for grant assistance for repairs from English Heritage. A 75% grant (instead of the usual 40%) was offered because the Parish roll only numbers 16 and the remedial work was extensive. English Heritage's priority was to ensure that the repairs were effective, but the opportunity was also taken to gather useful information about the structure and its defects, the length of time it takes to dry out, and the effectiveness of remedial solutions. Working closely with the Parochial Church Council's (PCC) architect, Jonathan Rhind, it was agreed to remove

the cement pointing, carry out various repairs to the stonework, grout the core locally (if necessary), and render the tower in a lime-based mix.
The decision to render was controversial because one of English Heritage's guiding principles in repair work is to 'conserve as found'. No-one had any memory of seeing the tower rendered and no early photographs existed. Nonetheless there was irrefutable evidence on the building of traces of render, although it was not possible to obtain sufficiently sizeable samples for analysis. There were, however, strong reasons to justify the decision on technical grounds. The stone that was used to construct the walls of the tower was a local fissile sandstone, known as Kentisbury slate. As the name implies this stone cleaves easily along its bedding plane and a number of stones had splits that would admit driving rain. The stones, which are relatively thin, were laid in random bond with a very high proportion of mortar joints to stone. It is the joints that are usually highly susceptible to driving rain, particularly at the junction of mortar and stone. Rendering the face would overcome this inherent problem. It was also agreed that the drying-out of the tower would be monitored and full protection for the work would remain in place for as long as possible.

The scaffolding and protective sheeting with two metre air gap at the base, which was in place for virtually two years

The first stage in the repair was to erect a full scaffold with a corrugated iron roof and monarflex sheeting fixed around all four sides, apart from the bottom two metres, which were left unsheeted to allow the wind to circulate behind and speed the drying. Timber dowels were inserted in holes drilled into the core of the wall from the inside and after four weeks they were removed and sent to the laboratory to measure their moisture content, while new dowels were inserted.
The cement pointing was chopped out externally and within days the ferns inside the west window died as the tower began to dry. This opening-up enabled a close inspection of the stonework, which revealed areas of poor quality decayed stone and sections that were unbonded to the face. The buttresses in particular had such minimal connection that it was the tower that was holding them up. Much of the stonework on the parapet was loose and had to be taken down and rebedded, which provided the opportunity to insert a new slate damp proof course at roof level. Surprisingly the core was in reasonable condition and no grouting was needed.

Challacombe Church: the rendered tower in November 1998

Drying out and rendering

When the work started in December 1996, the tower walls were saturated with moisture contents above 75%. Five months later the west and south elevations, which faced most of the prevailing weather, had dried to just over half that, with the higher parts drying quickest. By the summer of 1998 the upper parts of the western face and core had dried to about 25%, which could be classified as 'merely damp'. Monitoring will continue for a further two years.

After the stonework repairs had been completed five different sample render panels were prepared by the local contractor, St Cuthbert & Co, and left for a year under the protection of the sheeted scaffold. The contractor was keen to start the rendering in October but. English Heritage was adamant that it should be delayed until the following spring, firstly to ensure that it had the maximum chance of curing before the onset of winter weather, but also to provide more time for drying the tower.
The selected mix for the render was a hydraulic lime from the blue lias beds in Somerset, mixed in the local sand and stone dust. Three coats were applied, and each one generously sprayed with water for several days to prevent premature drying out. The aim was to render over most of the face but retain the contours of the stone. The decorative stonework around windows and on string courses was left unrendered, as was the stair turret, which had been added in the 1850s, the squared ashlar giving no evidence of any coating. The rendering took two plasterers six weeks, and the finished work was limewashed with a mix including burnt umber pigment.

Damp research

The Building Conservation and Research Team (BCRT) at English Heritage and its predecessors have been advising on the problems of damp towers for over a decade. Although it might seem to be a straightforward issue, analysing defects and providing effective remedies can be fraught with uncertainty. A number of different problems have been investigated, including examples where major repairs have failed. In a few instances the work was carried out in an exemplary fashion, but the amount of moisture entering the church actually increased!
Investigating four metres thick solid masonry in a non-destructive way is difficult, although thermal imaging will provide some clues. Very little scientific work on the effects of driving rain on such structures has been done, nor is much known about the absorption of moisture by different stones, renders, and mortar mixes.
Movement of moisture through walls is also not well understood. Rendering provides one solution, but this is not always appropriate, for example on churches which bear no evidence of having been rendered. The PCC may be implacably opposed to such an apparently drastic change to their tower. The use of different materials and techniques of repair has also produced variable results in the last few years. For these reasons, the BCRT is planning some limited research aimed at investigating these problems, the results of which may be useful to specifiers and contractors. This research is likely to include testing on purpose-made walls as well as on buildings in use. The work at Challacombe has produced some useful data with which to start.

Chris Wood

Building Conservation and' Research Team

Images Of England: A New Photographic Record

Images of England is a national project to create a new photographic record of all the listed buildings and structures in England at the turn of the millennium. The project aims to capture a 'defining image' of each listed building or group of listed buildings.

Over 360,000 new photographs will be taken over the next three years. All will be exterior views taken from publicly owned or publicly accessible land. For this purpose, in February 1999, the project received a grant of £3.09 million from Heritage Lottery Fund via the Millennium Festival Fund, the largest single grant awarded.
This definitive record of the built heritage of England will be of use to numerous different groups of people, from heritage professionals to teachers. Via the Internet anyone with an

interest will be able to view and read textual information on their local heritage in a regional and national context at the click of a button. By providing a ‘snapshot’ of the built heritage at the turn of the millennium the project will be recording for posterity those elements of the historic environment judged to be worthy of preservation at the end of the twentieth century. The activity of the survey taking place will itself generate interest in the built environment in every town and village in England.

The photographs will be taken by members of the Royal Photographic Society, who have volunteered to carry out survey work in their local communities. This method of working was tested in a successful Heritage Lottery-funded pilot project in 1996, in three districts around the country: Salisbury rural district, Tendring in Essex, and Derby.

Colour negative film is being used for the photographic survey. Each photographer is being supplied with film and a list of targets and instructions at briefing sessions around the country. After processing the negatives will be scanned onto digital storage media. The prints and negatives will be returned to the volunteers, who retain the copyright in the images while licensing their use in digital format to English Heritage. The digital images will be linked to existing information about listed buildings and made accessible to all, free of charge, on the Internet. The resultant digital image library will be one of the largest free on-line resources of its kind in the world.

The first survey season started at the beginning of August 1999 and continued until the end of October. Three subsequent survey seasons, concentrating work in the summer months, take place in 2000, 2001, and 2002. The first images will be made available on the internet through a prototype system during the year 2000. The completed database and associated services will be launched in the autumn of 2002.

Images of England is managed from Swindon by the National Monuments Record, the public archive of English Heritage. In addition to funding from the Lottery, financial backing has been provided by English Heritage. The film for the first survey season is being supplied by Kodak.

For more information about the project, please telephone 01793 414779 or consult the project website **www.imagesofengland.org.uk**

A sample of images from the 1996 pilot project can also be viewed on the website.

Huer’s House, Newquay, Cornwall (Grade II listed): a late eighteenth-century building used as a lookout to spot shoals of pilchards by a ‘Huer’, who signalled the position of the fish*

Catherine Brown, Images of England Regional Coordinator, on a trial survey in Swindon

Vikki Fenner

National Monuments Record Archives

Terra 2000

The 8th International Conference on the Study and Conservation of Earthen Architecture is to be held in Torquay, Devon, England UK, 11 to 13 May 2000. Here Jeanne Marie Teutonico, lately of English Heritage’s Building Conservation and Research Team, describes the upcoming event.

Bowhill, Exeter, Devon: an exterior view after conservation

International interest in the study and conservation of earthen architecture has been advancing steadily for the past 30 years, with a growing awareness that a significant proportion of the world's habitat and built heritage is made of earth. Increasing concern for sustainable development, affordable housing, and energy conservation has also heightened interest in the use of earth for new construction in many parts of the world.

Terra 2000 will be the 8th International Conference on the Study and Conservation of Earthen Architecture. Organised by English Heritage, the ICOMOS (UK) Earth Structures Committee, and the University of Plymouth's Centre for Earthen Architecture, this important event will be held at the Riviera Centre, Torquay from 11 to 13 May 2000.

Building on the results of previous conferences, Terra 2000 aims to provide an international forum for the exchange of new ideas and developments that will ensure the survival of the earthen architectural tradition into the next century. The conference also affords an opportunity to share the wealth of earth construction in the British Isles, from dramatic prehistoric fortifications to more modest dwellings and rural complexes.

Torquay has been chosen as the conference venue for its excellent conference facilities, its relative ease of access for international delegates, and its location in a region that contains one of England's largest collection of earth buildings and monuments.

The principal sessions of Terra 2000 will address a wide variety of themes, including archaeological monuments and sites, material and craftsmanship, conservation, repair and maintenance, continuity of tradition, new earthen architecture, and the political, legal, and economic context for earth building, including promotion and outreach. Each session will be chaired by an international expert. The official languages of the conference will be English, French, and Spanish, with simultaneous translations provided for all presentations. Pre-prints will be published and included in the conference fee.

In addition to lecture sessions, the conference will include an exhibition and trade fair, as well as a display of delegate's posters and videos. A tour of cob buildings in Devon will form part of the conference programme. In addition, several post-conference tours will offer delegates the opportunity to view the varied earthen architectural heritage of the United Kingdom in diverse regional locations.

Given the breadth of topics to be explored and the opportunities presented for international exchange, Terra 2000 will undoubtedly attract a diverse audience of architects, conservators, engineers, builders, art historians, planners, artists, students, and many others interested in the conservation and continuity of the earth building tradition.

The three-day conference, including local site visits, all lunches, evening reception and conference pre-prints costs £350. Special discounted rates of £300 for early registration (before 15 February 2000) and £200 for registered students. Further information regarding the submission of abstracts or attendance at the conference may be obtained from: Terra 2000 Conference Secretariat, Centre for Earthen Architecture, University of Plymouth, Faculty of Technology, Drake Circus, Plymouth PL4 8AA, England, UK. Tel: 44 (0) 1752 233304 Fax: 44 (0) 1752 233310 e-mail: terra2000@plymouth.ac.uk

Maiden Castle, Dorset: an aerial view of the earthworks

Ringmore, Devon: a typical cob cottage

Jeanne Marie Teutonico

formerly Building Conservation and Research Team

Lasers in art conservation

Lasers in the Conservation of Artworks: Lacona III, Fortena da Basso, Florence, Italy, 26–29 April 1999, conference report by Sasha Chapman

Avebury, Wiltshire: graffiti damage by vandals in 1996

This was the third in a series of conferences regarding the use of lasers in conservation; Crete and Liverpool were venues for the first and second, and Paris will be the venue for Lacona IV in 2001.

Lacona III was hosted jointly by Opificio delle Pietre Dure (Cultural Heritage Ministry) and the Instituto Elettronica Quantista, part of the Consiglio Nazionale delle Richerche (National Research Council). The conference was well represented with delegates and speakers from Europe and the USA. Conservators and scientists presented both oral and poster sessions on the use of lasers on a wide range of materials, including metals, paper, pigments, and stone.

The three-day conference was grouped broadly by subject, and interspersed by round table discussions chaired by the Getty Conservation Unit.

Developing the technique

The first session discussed the development of lasers in conservation. Professor John Asmus, Research Scientist, Emeritus, Institute for Pure and Applied Physical Science, University of California, San Diego discussed the historical development and pioneering work of laser technology to clean delicate objects following the Venice flood of 1966. The variety of materials lasers could clean were also highlighted when Professor Asmus discussed the work he was more recently involved with in China; the terracotta warriors and the ‘ice mummies’.

Limiting the damage

The subjects in the second session mainly concentrated on increasing the effectiveness of laser cleaning while limiting damage. Methods for improving quality and efficiency included comparing conventional methods with laser cleaning or using a combination technique, as discussed in my own paper on laser technology for graffiti removal. At Stonehenge and Avebury a combination of chemicals and laser were used to remove graffiti successfully without damaging the sensitive lichen communities. Veronique Verges Belmin, Laboratoire de Recherche des Monuments Historiques, France was one of several who discussed fluence and damage thresholds; practical experience had shown that by pre-wetting any soiling prior to laser radiation efficiency of cleaning is increased at lower (safer) threshold levels.

The use of laser cleaning where pigments are present was a popular topic. Various presentations and posters showed that some pigments were more sensitive than others, with the red hues altering the most, following radiation. P Pouli, Department of Physics , Loughborough University, UK discussed the effect of laser radiation on polychromy at Lincoln Cathedral. Because little is known about the absorption properties and effect of polychrome materials following laser radiation a variety of experiments on simulated samples are being studied. Reference was made to others who have worked in the field: C Weeks, 'The Portal de la Mere Dieu of Amiens Cathedral: its polychromy and Conservation', *IIC Studies in Conservation*, **43** (1998), 101–108, and S Rickerby, 'Heat alterations to pigments painted in the fresco technique', *The Conservator*, **15** (1991), 39–44. Lisa Shekede presented an unpublished paper at Lacona I.

Assisting in authentication

Lucia Burgio, Christopher Ingold Laboratories, University College London, UK presented a paper on her work using Raman spectroscopy to identify pigments. The laser beam hits the pigment being analysed and the energy scattered gives a unique fingerprint; this technique has recently been used to detect forgeries by being able to differentiate between ancient and modern pigments. The presence of binders makes identification more difficult, but it is a reliable technique for painted paper such as books or papyrus. Recent authentication work has been carried out for Sotheby's, Christies, and the British Library.

Two subjects that often receive little coverage are metals and stained glass. Andrew Naylor, Conservation and Sculpture Consultancy, UK submitted an interesting poster on the removal of paint from an eighteenth-century lead statue. The statue was successfully cleaned using a laser, when more conventional techniques would have been more limiting. H Romich, Fraunhofer – Institut Fur Silicatforschung (ISC), Germany and K Dickmann – Laserzentrum FH Munster (LFM), Germany have been experimenting removing corrosion crusts on stained glass using Excimer lasers. Tests have revealed that both chemical composition and the colour of the glass substrate, have a certain influence on the ablation process. Further experiments are necessary to determine the appropriate laser parameters for cleaning heavily corroded substrates.

Cleaning versus damage

Both oral and poster presentations represented a good range of materials and methods and it appeared that the laser was being considered not as a tool to be used in every situation, but as an alternative or complimentary treatment when other methods had failed or been less successful than was hoped. Though much more research and practical work is required on the differences between laser wavelengths and materials and the resultant effect regarding cleaning versus damage, all present understood the damage that could occur, as well as the good results that could be affected when the laser was used sensitively.

For further information visit: **www.area.fi.cnr.it/lacona3/** There is also a UK based web site on lasers, organised by the Mechanical Engineering Dept at Liverpool University: **www.lasers.org.uk**

Avebury, Wiltshire: after laser cleaning of graffiti damage

Stonehenge, Wiltshire: laser cleaning in progress

Sasha Chapman

Building Conservation and Research Team

NOTES

European-Heritage Net

an information network on cultural heritage policies

The *4th European Conference of Members* responsible for the Cultural Heritage in May 1996 recommended that a permanent information system be set up to keep authorities, professionals, researchers, and training specialists in touch with heritage developments in other countries, drawing on the Council of Europe's earlier report on architectural heritage policies. In November 1998 at the *Salon International du Partrimone* in Paris, the European-Heritage Net project was initiated in response to this recommendation.
This project brings together the Council of Europe, the European Union, the European Association of Firms Specializing in the Restoration of the Architectural Heritage with the central departments for heritage protection in the UK, France, Ireland, Spain, Hungary, and Norway, together with partners in information technology. The Department for Culture, Media, and Sport is the UK heritage partner with English Heritage, acting on its behalf and also taking the European lead on the multilingual thesaurus, given the expertise of the National Monuments Record in data standards.
By March 2000, it is intended to have a network with structured information on the cultural heritage policies of the six original partners as well as gathering information on 21 other categories. Beyond November 2000, the aim is to extend the network to all 47 partner countries of the European Cultural Convention and broadening the information, for example by including access to national inventories.
From August 1999 onwards it will be possible to access the prototype European-Heritage Net site **www.european-heritage.net** and to view the cultural policies of the partner countries. Within the time available, it has not been possible to revise fully the earlier UK document, but the text available will demonstrate the potential scope of the project. Later

this year, English Heritage will be in touch with heritage partners in the four home countries to discuss the future revision and on-going maintenance of the document.
The draft thesaurus of terms relating to European cultural policy is due to be completed in January 2000.
A seminar to be held in Budapest on 25–7 November 1999 will launch the project beyond the original partners.

Nigel Clubb

Director, National Monuments Record

English Heritage expert appointed by Getty Conservation Institute

Jeanne Marie Teutonico, one of English Heritage's expert architectural conservators and the programme manager for its highly successful building materials research programme, has been appointed to work at the J Paul Getty Trust in Los Angeles, California as Special Adviser to the Director of its Getty Conservation Institute (GCI). She took up her new position in September.

Born in America and a graduate of Princeton and Columbia universities, Ms Teutonico joined English Heritage from private consultancy where she had been working internationally and numbered among her clients UNESCO's Cultural Heritage Division. Previously she was the coordinator of the architectural conservation course at the International Centre for the Study of the Preservation and Restoration of Cultural Property in Rome (ICCROM), where she also carried out research, training, and advisory missions around the world.
During her time in London she has developed the technical side of English Heritage's work, creating the new *Research Transactions* publications of which she was series editor. Other achievements include the completion of the *Smeaton* series of seminal research projects concerned with lime-based mortars for conservation, the running of several international technical conferences, and the bringing together, under the auspices of the International Council of Monuments and Sites (ICOMOS), all UK interests in earthen architecture to prepare *Terra 2000*, the eighth international congress on the subject, which is to be held in Torquay next May.

John Fidler

Head of Buildings Conservation and Research Team

Richard Morris departs CBA

Richard Morris has resigned as Director of the Council for British Archaeology, after nearly eight years in the post and 24 years altogether as a member of the CBA staff.
He is returning to his first love – music – and also hopes to be able to spend more time on his writing projects, both archaeological and non-archaeological. His seminal works on church archaeology have been joined in recent years by biographies of Guy Gibson and Leonard Cheshire; the latter is due for publication next year. He will be a hard act to follow!
Richard joined the CBA in 1975 as Secretary to the Churches Committee and became its first full-time Research Officer in 1978, at one time combining this role with a part-time lectureship in the Department of Archaeology at the University of York. He published *The church in British archaeology* (a CBA research report) in 1983, and *Churches in the landscape* (Dent) in 1989 (recently reissued).
His contribution to British archaeology has been immense, both through his academic knowledge and through his contribution to the development of archaeological policy and

practice in recent years. This work has been considerably enhanced by his membership, and current chairmanship, of the Ancient Monuments Advisory Committee, and his appointment in 1996 as an English Heritage Commissioner. We are thankful that his resignation from the CBA will not affect his continued tenure of both these roles.

Val Horsler

Head of Publications

TICCIH 2000

'TICCIH 2000' will be a major event for the industrial heritage calendar in 2000, when some 300 delegates from around the world will attend the Millennium Congress on Industrial Archaeology at Imperial College, London, 30 August–3 September. Dr Anthony Streeten, Secretary, Industrial Archaeology Advisory Panel, describes the upcoming event.

TICCIH (the International Committee for the Conservation of the Industrial Heritage) grew out of a series of international congresses, the first of which was held at Ironbridge in 1973. The committee was formally established in Sweden in 1978 and TICCIH 2000 will be the eleventh congress, the second to be held in the United Kingdom.

TICCIH has national representatives and correspondents in 30 countries. It aims to promote international cooperation in the preservation, conservation, investigation, documentation, research, and presentation of the industrial heritage, and to promote education in these areas. The industrial heritage includes the physical remains of the industrial past, such as landscapes, sites, structures, plant, equipment, products, and other fixtures and fittings. It also covers documentation, comprising modern and contemporary text and photographic records, graphic material, and records in various media, of the memories and opinions of the men and women who have been involved in industry.

The international congress will comprise two major plenary sessions and a choice of 16 professional workshops. Congress members will also have a choice of regional study tours in Cornwall, Scotland, and Wales.

It is fitting that the Millennium Congress held in the UK should review *The Industrial Revolution of the 18th century* as one of the principal themes. The congress organisers are seeking papers that offer a new view on the growth of manufacturing industry and its associated settlements and transport systems between 1750 and 1850. The second theme brings the Congress up to the present day with a plenary session on *Mass Production and Consumerism 1850–2000*. The objective is to interpret the characteristic manufacturing activities of the past 150 years, including the production and marketing on a large scale of consumer goods such as clothing, footwear, furniture, food, motor vehicles, and domestic appliances.

Professional workshops will cover themes such as training, recording and publication, and the protection and management of the industrial heritage. These workshops will also cover specific subjects such as air transport, urban transport systems, and telecommunications.

The Congress is supported by English Heritage, the Science Museum, and the Association for Industrial Archaeology. Further details are included in the first announcement and call for papers, which is now available from:

TICCIH 2000 Congress Administrators
Conference Contact
42 Devonshire Road
Cambridge CBI 2BL
telephone: 01223 323437
fax: 01223 460396

e-mail: TICCIH2000@nmsi.ac.uk
website: HTTP://www.nmsi.ac.uk/researchers/TICCIH2000/

Anthony D F Streeten

Secretary, Industrial Archaeology Advisory Panel

New VAT campaign launched

The National Amenity Societies and twelve other non-governmental organisations have launched a new initiative on VAT. Hilary Weir, Secretary of The Architectural Heritage Fund explains.

On 13 October the Bishop of London and Dame Jennifer Jenkins launched *VAT and the built heritage*, a report commissioned by 19 non-governmental heritage organisations* with financial help from English Heritage and its Heritage Lottery Fund. The initiative began in 1998, when the Financial Secretary to the Treasury told the Tax Group of the Joint Committee of the National Amenity Societies that the Government did not have data with which to assess the fiscal impact of possible changes to the current VAT regulations.
Two surveys carried out by Jeremy Eckstein Associates between May and July 1999 obtained details of 362 separate projects involving work undertaken to 105 listed buildings (both ecclesiastical and secular) during 1998. The report estimates the total value of the building repair work to listed properties in the UK as £5 billion in 1998, and VAT on this work as a further £195 million.
The 19 commissioning organisations are calling on the Governments to take steps to introduce a single, harmonised rate of VAT at 5% on all work to listed buildings. They base this on evidence in the report that:
the effective rate of VAT levied depends on factors that have nothing to do with the historic or architectural merit of the listed building or the importance of the work being carried out
the owner of a listed building pays VAT at 17.5% on the cost of essential repairs, for example to the roof, but no VAT on the cost of constructing a new garage in the grounds or on demolishing a subsidiary wing of the building
the VAT burden falls most heavily on those least able to bear it, especially churches and the private owners of modest historic buildings. The cost is therefore largely borne by individuals and small, frequently charitable, organisations, for whom it is a sizeable financial burden
the complexity of the regulations is a positive incentive to VAT avoidance, and involves everyone concerned – owners, architects and other professionals, contractors, accountants, and Customs & Excise offices – in labourious and costly administration
By penalising repairs, the present VAT regime is at odds with Governments policy, not just on the historic environment, but also on sustainable development, urban regeneration, and recycling of existing buildings to help meet housing needs. The report estimates that harmonising VAT at 5% on work to listed buildings might lose the Exchequer some £92 a year, but concludes that this would certainly release existing moneys from tax into repairs and kick start new expenditure on repairs. This would benefit the sector and reduce the loss to the Exchequer.
Successive UK Governments have sheltered behind the alleged immutability of European Union law rather than undertaken to seek to change the present system. There is now, however, a window of opportunity. European Union finance ministers agreed unanimously in September that, for an experimental period, member states could reduce VAT on certain categories of labour-intensive services, including the renovation and repair of private dwellings. Two members states have already announced that they intend to take

advantage of this change. The organisations that commissioned *VAT and the built heritage* urge the UK Government to do likewise.

Hilary Weir

Secretary of The Architectural Heritage Fund

Copies of the Executive summary of *VAT and the built heritage – the impact of VAT on repairs and alterations to listed properties* by Jeremy Eckstein Associates can be obtained from:
The Architectural Heritage Fund,
Clareville House, 26–27 Oxendon Street,
London SW1Y 4EL;
tel 020 7925 0199; fax 020 7930 0295;
e-mail ahf@ahfund.co.uk.
The full report is available on the internet at http://www.vatbuiltheritage.org.uk.

*** Members of the Joint Committee of the National Amenity Societies:**
The Ancient Monuments Society,
Council for British Archaeology, Garden History Society, Georgian Group, Society for the Protection of Ancient Buildings, Twentieth Century Society, and Victorian Society.

Other societies:
The Architectural Heritage Fund, Churches Main Committee, Historic Chapels Trust, Historic Houses Association, Institute of Historic Buildings Conservation, International Council for Monuments and Sites (ICOMOS), National Trust, SAVE Britain's Heritage, National Trust for Scotland, Theatres Trust, Ulster Architectural Heritage Society, and United Kingdom
Association of Building Preservation Trusts.

Recent Publications

Etton: excavations at a Neolithic causewayed enclosure near Maxey, Cambridgeshire, 1982-7

by Francis Pryor
The Neolithic causewayed enclosure at Etton, on a floodplain 'island' within a relict stream meander in the Welland Valley, Maxey, Cambridgeshire, comprised a single, 'squashed oval' shaped ditch. Excavations revealed *c* 80% of the interior and recovered a wealth of evidence for the repeated ritual use of carefully aligned pits, into which were placed selected objects and human and animal bones, throughout the fourth millennium BC. In addition to pottery of the Hurst Fen tradition and Fengate style, bone, and 'imported' polished stone axes, a wealth of well preserved wooden and bark artefacts, and some vegetable-fibre twine were found, all demonstrating the establishment of the early tradition of British causewayed enclosures.
Date of publication: April 1999, price: £70,
ISBN 1 85074 681 8, Product Code: XA20002

John Dwight’s Fulham Pottery, excavations 1971–79

by Chris Green

John Dwight (*c* 1633–1703), the first English potter to achieve personal fame, chose Fulham as a fashionable and pleasant place to set up his stoneware pottery, near the Thames. Established *c* 1672, it achieved the first commercially successful production of stoneware in England, and continued in operation until the 1980s. This report comprises a summary of eight years of excavation at Fulham Pottery. Chris Green describes the analysis of finch from the site and newly discovered documentary source material, revealing that Dwight’s claims to have discovered a secret process for making porcelain were justified.

Finds from pits and soakaways show that in the early years of his work, up to 1675, he experimented with an extraordinarily wide range of finewares based on Rhenish, Dutch, English, and Chinese originals. The excavated evidence shows that after *c* 1725 Fulham was no longer distinguished among London potteries by the quality of its wares, but also that its unique continuity of stoneware production into the twentieth century provides an important record of the fortunes of the industry as a whole.

Date of publication: June 1999, price: £35,

ISBN 1 85074 599 4, Product Code: XA20005

Boxgrove, a Middle Pleistocene hominid site at Eartham Quarry, Boxgrove, West Sussex

by Mark Roberts and Simon Parfitt

This is an internationally important Palaeolithic site. On the Sussex coast, stretching for miles east and west, an undisturbed ancient land surface has provided not only the oldest hominid bones (a shin bone and two teeth) in Britain, but also detailed evidence of the ancient environment and of the living practices of these 500,000 year old people.

This report, the first of two volumes, describes the excavations from 1983 to 1992 and from 1995 to 1996 and the subsequent analyses of the faunal, floral, and cultural materials recovered. The authors analyse in detail and decipher the complex geological history of the site, the thousands of animal bones (both invertebrate and vertebrate) and other environmentally sensitive materials, and the pristine flint artefacts preserved on the living surface. Photographs and reconstructions show the changing landscape history of the site, the pattern of flint chip-fall as stone tools were manufactured ‘on the spot’ for use in butchering, and the butchering marks on the bones themselves.

Such an important, and rare discovery will be invaluable to Palaeolithic archaeologists worldwide for its evidence of human evolution, early hominid culture, and for archaeological and geological methodology.

Date of publication: August 1999, price: £80,

ISBN 1 85074 670 2, Product Code: XA20001

Rows of Chester

edited by Andrew Brown

Almost ten years of historical and archaeological research on the Rows of Chester, the most extensive surviving example in Europe of a medieval two-tier complex of shops, are detailed in this thorough and authoritative report.

The Rows of Chester form a unique system of first-floor walkways through the frontages of buildings on the city's four main streets. They pass above the street-level shops, providing access to a second tier of shops at Row level. Established in 1984, the Chester Rows Research Project aimed to survey all of the Rows buildings using an interdisciplinary approach, combining archaeological investigation and historical research with an appreciation of the architectural and social influences that gave rise to the two-tier system. The ultimate aim was to understand the origins of the Rows and the reasons for their survival.
Date of publication: September 1999, price: £40,
ISBN 1 85074 629 X, Product Code: XC10852

Archaeology Review 1997–98

by Adrian Olivier
A review of projects supported by English Heritage or carried out by English Heritage staff during the financial year 1997–98.
Date of publication: September 1999, price: free,
ISBN 1 85074 742 3, Product Code: XH20133


Neolithic flint mines in England

by Martyn Barber, David Field, and Peter Topping
As examples of our earliest industrial heritage, Neolithic flint mines represent archaeological sites of the first importance, with a special part to play in the history of technology. This is the first detailed study of the evidence of Neolithic flint mines in England. Many of the sites that survive as earthworks or as cropmarks had never been surveyed or accurately planned. The RCHME has compiled detailed plans of the surface areas of all known flint mines and investigated the sites of other potential examples. In this volume, a combination of field survey, aerial photography, and archival research has been used to provide a synthesis of the evidence to date.
Date of publication: October 1999, price: £25,
ISBN 1 873592 39 6, Product Code: XE20028


Behind bars, the hidden architecture of England's prisons

by Allan Brodie, Jane Croom, and James ODavies
Prisons exert a compelling fascination – what happens inside them is beyond the experience of most people. Every working prison in England and Wales was visited by the RCHME with the aim of reporting the current appearance of prisons. Part of this work has been to record aspects of life in modern prisons, for although architecture is about buildings, it is also about people. This book thus offers a glimpse of the hidden world of prisons in text and with colour images of these fascinating buildings.
Date of publication: October 1999, price: £10,
ISBN 1 873592 41 8, Product Code: XA20010


The workhouse, a study of poor law buildings in England

by Kathryn Morrison

The study of the poor law is one of endless social experimentation, a continuous but ultimately fruitless effort to solve the problems of the dependent poor. The buildings were the laboratories for these experiments and it is in their design and plan that prevalent social and economic theories can be seen translated into bricks and mortar. Recognising that an undervalued and poorly understood category of building was in danger of being lost, the RCHME has attempted to make a record of these structures against their historical background and in this volume traces how changes in poor-law legislation affected workhouse designs. This is a book for social historians as well as for architectural historians and includes a comprehensive gazetteer of sites.
Date of publication: November 1999, price: £40,
ISBN 1 873592 36 1, Product Code: XC20025

Houses of the gentry, 1480–1680

by Nicholas Cooper
From the end of the fifteenth century to the closing years of the seventeenth, England underwent radical social change. English architecture changed radically as well, and the homes of the gentry were transformed as members of this class grew in numbers, wealth, and importance. This abundantly illustrated book provides for the first time a full account of the houses that were built and inhabited by the upper classes during this rich and fascinating period. Architectural historian Nicholas Cooper, who retired from the Royal Commission on the Historical Monuments of England before merger with English Heritage on 1 April 1999, explores hundreds of gentry houses, some well known and others far less familiar, and considers their evolution in the light of the economic, political, and social changes of the age. This book is a treasury of information about English upper-class houses of 1480 to 1680, and about the attitudes and motives of those who built, owned, and lived in them.
Date of publication: November 1999, price: £50,
ISBN 0 300 07390 9. Published by Yale University Press for the Paul Mellon Centre for Studies in British Art, in association with English Heritage

Graffiti on historic buildings and monuments: methods of removal and prevention

This *Technical advice note* gives guidance to architects, surveyors, buildings managers, and owners on the removal of graffiti from historic buildings and monuments. It includes information on the identification of graffiti media, describes appropriate removal techniques, provides advice on carrying out a graffiti removal operation, and discusses strategies for preventing or reducing graffiti attack, including the use of sacrificial graffiti barriers.
Date of publication: October 1999, price: free,
Product Code: XH20101

Anthrax and historic plaster: managing minor risks in historic building refurbishment

The handling of historic hair-reinforced plasterwork presents an exceedingly low risk of anthrax infection, and this risk is easily controlled. The Health and Safety Executive has published guidance on assessing and controlling the risk of anthrax infection in a range of industries, but misinterpretation of the guidance may prompt some to cite the risk as a reason to implement needless and drastic control measures, including the removal of historic surface finishes in order to eradicate the risk of anthrax infection in historic buildings.

This *Technical advice note* recommends simple and reasonable precautions, including good hygiene practices on site, which will keep the risk of infection at a negligible level while meeting the requirements of relevant statutory controls.

Date of publication: October 1999, price: free,

Product Code: XH20093

Thatch and thatching

This *guidance note* expresses English Heritage's concern at the difficulty faced by the existing planning system in conserving local thatching traditions. English Heritage wishes to support local authorities in formulating conservation policy, which would be based on extensive knowledge and appreciation of regional diversity in thatch.

Policy should aim to sustain the materials and techniques used in the three currently prevalent traditions (water reed, combed wheat reed, and long straw), to conserve the character of an area, and to protect material of archaeological interest.

Recent research (supported by English Heritage) has demonstrated that thanks to the long-established practice of repairing rather than completely replacing long straw thatch, some long surviving thatch is medieval. In questions of grant, or applications to change thatch material or style, local authorities should apply informed appreciation of the traditions of their area.

Date of publication: Winter 1999/2000, price: free,

Product Code: XH20139

The presentation of historic building survey in CAD

This document was written in response to requests for drawing standards when using CAD to produce survey drawings from both contractors and project managers.

The aim of the document is to demonstrate that it is possible to produce survey drawings in CAD of a quality equivalent to the quality achieved by traditional draughting.

This is achieved by reproducing a wide selection of CAD survey drawings including: large scale detail, complex plans and elevations, solid models, and reconstruction views.

Relevant issues are discussed in the text, although no technical details are addressed.

Date of publication: September 1999, price: free,

Product Code: XH20129

The heritage dividend: measuring the results of English Heritage regeneration

foreword by Sir Jocelyn Stevens (English Heritage, Town Centres Limited, and the London School of Economics)

English Heritage has been contributing to the regeneration of England's towns and cities through the conservation of historic buildings for many years. The role of the built heritage in the regeneration of communities, however, has not always been fully understood. As we recognise the importance of existing character and diversity to identity and inclusion, the value of building on existing assets to create sustainable development, and the multi-faceted nature of successful renewal programmes, there are new opportunities for heritage expenditure to have an even greater impact on social and economic.as well as physical and environmental regeneration.

In The heritage dividend case studies are presented on a range of buildings of various uses in the hope that this report will encourage others to build on the valuable example set by English Heritage and our partners across England.

Date of publication: August 1999, price: free,

Product Code: XC20033

Conservation plans in action: proceedings of the Oxford Conference

by Kate Clark

In March 1998 conservation professionals from many different disciplines came together at a major conference in Oxford to debate the use of Conservation Plans in the context of the United Kingdom. At its simplest, a Conservation Plan sets out the significance of a place and explains how that significance will be retained in any future use, alteration, management, or development. A plan brings together ecological, architectural, archaeological, historical, landscape, and museum-related issues, to be used to reconcile the varied and sometimes conflicting approaches to conservation that different professions bring to the understanding and management of a place.

Conservation plans in action contains the main contributions to the Oxford conference, as well as new material on how Conservation Plans have developed since the conference, and practical guidance on the preparation of Plans.

Date of publication: July 1999, price, £15,

ISBN 1 85074 752 0, Product Code: XH20127

Enabling development and the conservation of heritage assets

English Heritage has become increasingly concerned about 'enabling developments' being promoted as a means of rescuing historic buildings at risk and has produced a policy statement: *Enabling development and the conservation of heritage assets*. The document states clearly that there should be a presumption against such developments unless the benefits to the community can clearly be shown to outweigh the disadvantages, and sets out strict criteria against which such proposals should be judged.

Date of publication: 1999, price: free,

Product Code: XH20128

Stopping the rot: a step by step guide to serving Urgent Works and Repairs Notices

Stopping the rot is a detailed, technical, step by step guide for local authorities on serving Urgent Works and Repairs Notices. It highlights the need for action when a building first starts to deteriorate and encourages local authorities to make frequent and earlier use of their statutory powers. *Stopping the rot* builds upon the experience of English Heritage's own buildings at risk work in London to help local authorities through each stage of the Urgent Works Notice and Repairs Notice processes, to explain how the provisions differ from and complement each other, and how to deal with some of the problems that arise.
Date of publication: 1999 (2 edn), price: free,
Product Code: XH20112

English Heritage Register of Buildings at Risk 1999

The Register brings together information on all the Grade I and II* listed buildings and scheduled ancient monuments (structures rather than earthworks), known to be 'at risk' through neglect and decay, or vulnerable to becoming so. The aim of the Register is to focus attention on neglected historic buildings and monuments, and, as a working tool, to prioritise action by English Heritage, local authorities, building preservation trusts, funding bodies, and everyone who can play a part in securing the future of these outstanding and irreplaceable parts of our heritage.
The Register 1999 is the second edition of the first ever country-wide Buildings at Risk Register and has been compiled by English Heritage staff in conjunction with local planning authorities and other bodies. It includes address details, list grade, scheduling status, and the building at risk priority category. It also includes detailed statistical information and an introduction to the English Heritage Buildings at Risk Strategy.
Date of publication: 1999, price: free,
Product Code: XH20113

English Heritage Regional Register of Buildings at Risk 1999

The nine Regional Buildings at Risk Registers provide a more detailed overview of the information contained in English Heritage Register of Buildings at Risk 1999. The introduction includes a discussion of English Heritage's strategy in dealing with Buildings at Risk and gives a brief analysis of the information contained in each register. Each building at risk entry is illustrated with a photograph and includes the building or monument's address, designation, condition and occupancy, ownership type, and priority category. It also gives a short paragraph describing the building or monument and its current situation. Contact telephone numbers for members of our regional teams are provided. The Register for Greater London encompasses details of Grade II listed buildings at risk in addition to Grade I and Grade II* listed buildings at risk.

English Heritage Register of Buildings at Risk in the East Midlands Region 1999…
Product Code: XH20122
English Heritage Register of Buildings at Risk in the East of England Region 1999...
Product Code: XH20116
English Heritage Register of Buildings at Risk in the London Region 1999… Product Code: XH20117

English Heritage Register of Buildings at Risk in the North East Region 1999… Product Code: XH20114
English Heritage Register of Buildings at Risk in the North West Region 1999… Product Code: XH20118
English Heritage Register of Buildings at Risk in the South East Region 1999… Product Code: XH20121
English Heritage Register of Buildings at Risk in the South West Region 1999… Product Code: XH20115
English Heritage Register of Buildings at Risk in the West Midlands 1999… Product Code: XH20119
English Heritage Register of Buildings at Risk in Yorkshire Region 1999… Product Code: XH20120
Date of publication: 1999, price: free

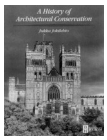
Buildings at Risk: a new strategy

In parallel with the *Register of Buildings at Risk*, English Heritage has published B*uildings at Risk: a new strategy*, which considers the issues in detail and provides guidance on dealing with buildings at risk. It discusses the need for prevention, ways to prioritise action, and solutions to the problem of buildings at risk. Several case studies have been highlighted in London, where the Register of Buildings at Risk first appeared in January 1991. The Strategy also contains a list of useful contacts and further reading.
Date of publication: 1998, price: free,
Product Code: XH20084

BOOK REVIEWS

A heroic achievement

A history of architectural conservation,
by Jukka Jokilehto, 1999,
Butterworth Heinemann, £55 [0 7506 3793 5]



Jukka Jokilehto has been a student of the ethical and historical aspects of conservation for more than 20 years. In his work for ICCROM and UNESCO, he has been privileged to observe and assist many nations in the process of defining, preserving, and displaying their architectural heritages in an epoch of immense cultural change. Here, he sets out to draw together thousands of international sources, to record and evaluate attitudes to historical architecture and its preservation from the time of the pharaohs to the closing years of the second millennium AD.
Writings on architecture and art are imbued with historical consciousness, a fertile interaction of imaginative and scientific speculation. Jokilehto postulates a framework of theoretical developments, linked in series as a narrative. He records key evolutionary phases: in *The Age of Enlightenment* we are reminded of the great excavations of Pompeii and Herculaneum, and subsequent revolutions in scholarship and in taste; from there we can follow the effects of such changes in the work of Valadier and others under the Napoleonic regime in Rome, and through the trench academic tradition to the Service des Monuments Historiques and what he calls ‘stylistic restoration’. In contrast, in *The Age of Romanticism* the North European tradition of antiquarian research is discussed, and clear pathways of development are sketched out from here, through the intellectual–religious movements of Victorian England, to Ruskinian aesthetics and ‘conservation’. Jokilehto

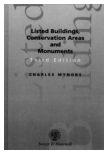
also chronicles some of the themes running through the history of theoretical enquiry: Ruskin's influence on Proust, for example, and the relationship between Morris and Muthesius, or Dinsmoor and Orlandos.
It is a well rehearsed historiographic formula, though enhanced here by Jokilehto's wide-ranging approach, which focuses on major developments among German, French, Austrian, and Italian contributors (to a lesser degree, Spanish, American, Greek, Scandinavian, and many other national trends are also covered). The survey of twentieth-century developments draws heavily on Italian references, but performs a valuable service by introducing the work and influence of Cesare Brandi, whose writings have never been translated into English, though many influential practitioners have developed methodologies that are heavily influenced by the Brandian critical tradition. In the closing pages, setting post-war events within a context of burgeoning international collaboration, Jokilehto suggests problems and challenges for the future of 'cultural heritage in its continuously broadening dimension.'
The scope is impressive, but it is a schematic articulation of consecutive developments, rather over-reliant on the 'great men' approach to historical enquiry; Jokilehto confines himself to the well tried conventions of history writing. As such, and in part because of its immense breadth, the book ultimately lacks analytical depth. The focus is, in essence, European, and the book itself, in character and outlook, seems to belong to a venerable but remote Western European scholarly tradition. As a result, it is rather rambling, mechanical, and a little unbalanced. The survey leaves many stones unturned. The approaches to preservation that have developed outside the European field of influence are barely touched upon. I am mystified by the complete absence of any reference to the Burra Charter, which introduced a number of significant concepts. The entire international conservation movement, its modern organisations, charters, and conventions, are effectively crammed into two pages. Chapter 10, 'Definitions and trends', is as woolly as it sounds.
A history of architectural conservation serves as a useful instrument for orientation, and it is a heroic achievement. But I did not find the book as inspiring, nor as compelling, as I expected. The field is open, I hope, for many more challenging forays into this particular territory.

David Mason

Building Conservation and Research Team

Law and practice

Listed buildings, conservation areas and monuments (3 edn),
by Charles Mynors, 1998,
Sweet and Maxwell, £95 [ISBN 0 7520 0440 9]



Since this book was first published in 1989, it has provided the most easy to use and authoritative guide to the law and practice relating to listed buildings and conversation areas. With this new edition the book's ambit has been helpfully expanded to include ancient monuments.
As well as a useful general overview of the historical background to, and sources of, the current law and the way that the various controls are administered, the book has three main sections addressing the identification and recording the built heritage, their repair and maintenance, and the carrying out works to historic buildings and monuments. The book

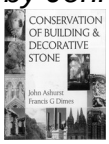
then discusses other forms of control relating to the treatment of trees and advertising and also includes a brief summary of the law in Scotland and Northern Ireland.
The remainder of the book is made up of four appendices. The first one contains forms and precedents for, among other topics, a range of notices, applications, and appeals. The second appendix contains specimen conditions on listed building consents. There is also an appendix listing a number of recent convictions for breaches of the legislation and the book ends with a section highlighting a number of possible changes for this area of law. One of these, at least, has already happened in practice: that of the amalgamation of the Royal Commission on the Historical Monuments of England with English Heritage.
Some of the most important changes in this area since the previous edition flow from case law and the effects of two of the most important of these, Shimizu v Westminster City Council and R v Sandhu are discussed fully Another 85 recorded decisions are noted and commented upon.
As ever, the writing is clear and the treatment of what is a very wide subject area is remarkably thorough. It is the perfect starting point for a novice in this area, be they a lawyer or conservation officer, in answering any query on the law and practice. Even those of us with considerable experience will feel very comforted in having a copy of this book by our side when advising on any aspect of conservation law

Howard Bottomley

Legal Section

Keeping stone looking good

Conservation of building & decorative stone (pbk edn),
by John Hurst and Francis G Dimes, 1998, Butterworth Heinemann, £35 [0 7506 3898 2]



The Butterworth Heinemann Conservation and Museology series is well known in the conservation community. The distinctive black-covered hardbacks, however, were expensive and it has been heartening recently to see paperback editions being produced of some of the volumes from this important series (for example *Conservation of historic buildings* by Sir Bernard Fielden and the volume on glass by Newton and Davison). The present volume by Ashurst and Dimes, originally published in as two volumes in 1990, has been added to the list, now as a single, stout volume. The book is in every respect a facsimile of the 1990 edition: 254 pages, about half of them written by the late Francis Dimes, consultant geologist and formerly curator of building stones at the Geologcal Museum. Only John Ashurst's short preface, and the new colour softback cover, distinguish this book from its predecessor. The absence of revisions may partly be a consequence of the death of Dimes in 1997.
Even without amplification, however, the volume remains an invaluable resource for the stone conservator. Part 1 begins with Ian Bristow's brief historical résumé of attitudes to stone repair. It is followed by an immensely informative series of chapters by Dimes discussing the character and variety of igneous, sedimentary, and metamorphic rocks with reference to the buildings in which these rocks are to be found throughout the regions of Great Britain. The style is discursive, not dry, making this part of the book an enjoyable read in its own right, though its chief merit lies in its bridging of the gap between geological science and architectural study. I have personally found the tabular format employed in the geology sections of *Stone in building, its use and potential today* more useful for reference purposes in the field. *Conservation of building and decorative stone*, however, is more comprehensive, and a separate index is provided for section 1, enabling easy reference to

stone types, geological series, important quarries, etc. This is not an encyclopaedia, I looked in vain for references to Springwell and Blue Bank sandstones, for instance; and one will not find each and every Costwold limestone dealt with. But Dimes covers a good proportion of the most common building stones used, past and present.
Section 2 (formerly volume 2) is more heterogeneous, comprising contributions from a number of professional experts dealing with structural stone repairs, traditional masonry techniques, conservation of stone in museums, cleaning of stone, surface treatments, mortars, and sundry technical issues. Case studies are included (chief among them the preservation of medieval statuary at Westminster Abbey Chapter House, and the repair and desalination of masonry at the Parliament Buildings, Ottawa). Some of these contributions are reworkings of text that had already been published elsewhere, notably in *Practical building conservation* volumes 1 and 3 (1987) and, in the case of John Larson's essays, in the *Conservator* (1979). Current and recent developments in cleaning, consolidation, and repair are lacking, and some updated recommendations on mortar mixes, biocides, and other issues to take account of recent research, innovation, and legislation, were undoubtedly due. But the overall result does, I think, adequately satsify the need to provide a broad-ranging perspective on the preservation and treatment of stone both in buildings and in sculpture, and incorporates eminently useful lessons and models for site and laboratory practice.
This is not the last word on stone conservation and should not be one's only source of guidance. Nevertheless it remains one of the most comprehensive books on the subject of stone conservation, and the price will bring it within range of many readers, including students, to whom it is essential, and with one or two necessary additional volumes forms a practically useful corpus of reference material for professional and student alike.

David Mason

Building Conservation and Research Team

SAVING ANCIENT TILES

The aesthetic appeal of medieval floor tiles and their research value has led to concern over their conservation, says Dr Sara Lunt, who describes efforts for their conservation.

Floor tiles are one of the very few surviving elements of the highly decorated interiors of late medieval buildings. They appeal to us as art objects, they have a market value, and they are a rich resource for students of medieval aesthetics, technology, and the organisation of craft production.
English Heritage is responsible for one of the largest collections of medieval tiles in the United Kingdom. Many are *in situ* on guardianship sites, and, as with all other exposed tile pavements, they are being increasingly destroyed. The heavy tread of modern visitors and climatic and ecological effects cause the glazed surfaces to crack and flake, the underlying decoration to wear away, and the tile bodies themselves to break apart.

Monitoring programmes

English Heritage has sponsored several programmes, in particular the Yorkshire Tiles Project, to monitor deterioration and to identify the principal agents of destruction. It is clear that, as with all historic fabric, *in situ* conservation and protection can only slow the rate of destruction. For the magnificent pavements of the Yorkshire abbeys, and for others of national importance such as the Cleve Abbey frater pavement, preserving the tiles themselves by lifting them may eventually be judged more important than keeping them *in situ*.

On guardianship sites in the Midlands the *in situ* tiles are more modest, both in extent and type. Tiles are exposed on 13 Midlands sites, and most are in the open air. ‘Che largest areas are those at Thetford and at Castle Acre, but many are small, random patches of tiling. The majority were set in concrete during the 1950s consolidation programmes and are now surrounded by gravel or grass. Decorated tiles are common among these examples, and are visually important on sites that have otherwise lost their fine details, although there are few examples of high-quality, customised designs. The main academic interest lies in the distributions of certain designs which, together with technological traits, are useful for studying the organisation of tile production.

Survey and conservation

A preliminary survey and condition report on the Midlands tiles was made by Sandra Davison in 1995–96. This was followed by a policy decision to preserve all the exposed tiles *in situ* because their value and interest would be lost if they were divorced from their sites and the sites themselves would be diminished. It was recognised that this was an opportunity to develop in the field a preservation programme that would be low cost and sustainable in the long term.

In 1996-97, remedial conservation was begun by Leslie Durbin of Jackfield Conservation Studio. At the same time, all the exposed tiles were recorded by planning, photography, and tracing of designs by the Birmingham University Field Archaeology Unit. This was to create a base record for monitoring and to provide a hedge against loss.

Thetford Priory, Norfolk:
tiles in the Lady Chapel after conservation, showing the mortar fillet (top and right) and the remnants of the winter sand covering (right); this practice is now discontinued

The remedial conservation involved cleaning the tiles and consolidating the tile settings (for technical details, source material, and site-specific programmes see Lesley Durbin 1966 (in archive), Midland medieval tile project: condition reports). The tile surfaces were cleaned of all detectable organic material, using biodegradable, non-ionic detergent. Crumbling concrete grout was replaced with lime mortar; and around each tile area a continuous fillet was created of mortar with a small cement admix, resting on pea-gravel and sloping away from the tiles. This fillet helps to drain off rain water and holds the vulnerable perimeter tiles firmly in place. The clear border makes the tiles more visible and also helps to prevent damage from mower blades, a common problem on sites where tile patches nestle in grass. Most significantly, the fillet inhibits re-invasion between tiles by grass and weeds.

Castle Rising Castle, Norfolk:
low-fired tiles from the Bawsey kiln, mounted on a wall in the nineteenth century, showing severe surface damage

Buildwas Abbey, Shropshire: tiles in the Burnell Chapel before conservation, showing black algae infestation and grass encroachment

Buildwas Abbey, Shropshire: the same tiles 18 months after conservation and immediately after maintenance. The black algae is still visible although much reduced

Effective protection

Both Davison and Durbin emphasise that the effectiveness of the conservation would be negated without taking other steps to protect the tile areas. Winter covers – shallow wooden boxes buffered with foam rubber – are installed over the open-air tiles in October and removed in April. Wooden curbs have been installed where gravel abuts tiles areas. Custodial housekeeping regimes are now in place, to keep tiles free of dust and grit and to insure regular vigilance. Visitors have been re-routed, so that, although the tiles remain visible, they do not walk on them. Information about the history and conservation of the tiles will be provided for visitors as new site literature and audio tours are produced.
Monitoring the tiles after the remedial conservation has identified great differences in the type and intensity of destructive processes from site to site and even within the confines of one site. In the most extreme cases, on the poorly drained sites in the west, tile surfaces are re-infested by algae and lichen within a season. These organisms retain water, as well as creating the conditions under which larger plants can colonise. In the east, low-fired tiles from the medieval Bawsey workshop are prone to mechanical damage. A small break at the tile edge exposes the soft, vulnerable interior, cracks propagate through the body, and then the whole tile may disintegrate. Thus, the inherent characteristics of the tiles may be as significant as the site environments in contributing to deterioration.

Lessons learned

Monitoring has shown that maintenance regimes must be site-specific; and that annual inspection is necessary to identify deterioration and to address it before serious loss occurs. It has also confirmed that successful preservation depends on a combination of monitoring, conservation, winter coverings, housekeeping, and visitor management. The rate of deterioration can be reduced in direct proportion to the number of these measures that are implemented.
These findings now underpin strategies which are being incorporated in the sites' Conservation Plans. This will insure that essential long-term care is undertaken.
Meanwhile, a catalogue is being prepared of designs and technological data for all the tiles in the Midlands. This information will be used for site literature, to accompany handling collections and other educational initiatives, and to contribute to tile studios generally. The catalogue itself is designed for on-line access to reach as wide an audience as possible. Eventually, it will include all English Heritage tiles and will cover both historic information and conservation data. This information would become an essential resource for all those who enjoy, research, and care for medieval tiles.

Sara Lunt

Senior Curator, East Midlands