DE BA

DEVON EARTH BUILDING ASSOCIATION

NEWSLETTER 7

Winter 1999

DEVON COUNTY SHOW 1999

This year saw the Association return to the County Show after a break of a couple of years. We aimed to construct a small building to help demonstrate its viability. About a week before the show, concrete blocks which were supplied by John Hughes, were laid on the grass to act as a base for a circular building which was about 2.5 m (9'6" in old money) in diameter and a low lift of cob was constructed. During the show, the building was progressed with two main lifts on the Thursday and Friday of the show. A final short lift to levelling off the eaves at about 1.8 (6') was completed on the morning of the Saturday so that a simple frame of timber poles could be erected as a roof structure. A small area of thatching straw was fixed at the eaves to give the impression of its potential final appearance. In size and appearance, the building resembles a traditional ash house but could equally have been used as a small garden store or potting shed. With no suitable material available on the site, the cob had to be brought onto the showground. With both red and brown cob coming from different locations, there was also the opportunity to demonstrate the variety in cob throughout the county. The building was entered via a door opening with an arched head formed with cob and the other window openings were either circular or with an arched top so that no lintels were needed. The sculptural properties of cob were also demonstrated by a hand moulded surround to one of the windows, created by Jan Sharpe, having been influenced by Jan and Jeremy's recent visit to Mexico and a face was created on the surface of the wall by David Joyce. Crowds gathered when cob was actually being placed on the wall with questions being asked all the time on the building of cob and the care of cob buildings. Rendering and plaster were also demonstrated with the plinth being provided with a rendered coat applied by Jeremy Sharpe while mud plaster was applied to other places. Very little time was spent in building the cob which went up surprisingly quickly. The only real restriction to the amount being built was the quantities of cob which could be brought onto site on each day by Kevin McCabe, Chris Brookman and Adrian Hunt. With a readily available source of the raw materials, a much bigger building could possibly be built in the future. The manufacture and use of cob blocks was also demonstrated with a machine brought up from Plymouth University by Dave Clarke.

The degree of interest in the stand once again demonstrated the usefulness of attending the county show and similar events where our message can be passed onto members of the general public as well as builders and building professionals. Many misconceptions can be corrected and a greater potential for new build can be shown. It is also gratifying to hear so many people say how they have heard of the use of lime plasters and renders, which shows that the message is getting through. Many thanks to all those who contributed with materials and time to make the DEBA stand a success and also to Graham West of Cob Construction who helped remove the cob from the site with his truck at the end of the show. It was sad to see the building being demolished by a JCB at the end of the Saturday. Perhaps we can construct a permanent building that does not need to be demolished at a future show?

Barry Honeysett

Cover Picture: Cob building erected at the Devon County Show 1999

BOOK REVIEW

Ray Harrison
English Heritage Research Transactions - Volume 3 July 1999
EARTH: The Conservation and Repair of Bowhill, Exeter: Working with Cob
108pp 18 coloured plates - 244 black and white plates and figures £30.00

There cannot be many members of DEBA who are not familiar with Bowhill, the Grade 1 late C15 mansion of the Hollands, once standing in the countryside outside Exeter, but now swallowed up in its western suburbs. It was taken into Guardianship in 1976 as a threatened building and as a notable example of a West Country house on the cusp between polite and vernacular in its architecture and construction. The elaborate timber "Exeter" roof of its hall is perhaps its most obvious claim to fame, but it has achieved probably greater importance as a testing ground for new conservation techniques particularly for cob but also for other historic uses of earth in building work.

This repair campaign mostly took place between 1990 and 1995 and Ray Harrison, the author of this work and a founder member of DEBA, was responsible for all the technical advice on the cob and earth repair aspects of the conservation programme as well as for recording its progress. He "inherited" the building from a series of predecessor architects with differing ideas on approaches to its conservation. To Ray and his colleague Francis Kelly [another DEBA member] must be given credit for the programme of cob repair and rebuilding which is set out in this volume and which has acted as an inspiration and an exemplar for the development of cob repair techniques generally. Moreover Ray ensured that a full record of the work was kept, particularly by photography. This has enabled the production of a book which is easy to understand and entertaining to look at. The multiplicity of black and white photographs are complemented by excellent coloured plates as well as by many drawings and sketches by Ray. The quality of production is of a commendably high standard.

To quote Ray's own foreword, the contents of the book in short are as follows:

"The first part of the study puts the building and the works into a broad context, and gives some background by explaining the role of the State in the direct conservation of historic buildings, describing briefly the way in which this worked with individual sites. Then follows a limited examination of the former place of earth in building in Britain and, more specifically, the place of the Bowhill works within West Country tradition. The final and main section presents summaries of a series of cob, daub and lime-based repair and rebuilding projects, and of controlled experiments in lime-based rendering, all carried out at Bowhill from 1990 to 1995. A glossary offering definitions of some of the more particular or arcane building and material terms used is also included".

All these sections are comprehensive and clear in the description of the techniques involved, and set out the problems, failures and successes honestly. An impression is given of growing confidence in the use of earth as the project develops, with less reliance on lime as a "glue". Not only is the repair of mass cob addressed but also that of cob daub and plasters. The problems of attaching new cob construction to existing cob walls, the use of cob blocks - even for the construction of cavity walls - are among the many subjects covered.

What emerges from the book is a huge enthusiasm for the subject of cob repair, and clearly this enthusiasm was passed on to the men of the direct labour force working

on the building. Fortunately, English Heritage were prepared to spend generously on the repairs at Bowhill which allowed a complete and long period of experimental repair to take place. This money was well spent since it has advanced the subject enormously. It seems unlikely now under the system of contracting out all repair work to their properties whether such a programme of combined experiment with repair could take place so successfully. What the book also shows is that none of the technology involved is beyond the competence of a sensible conservation-minded builder and most would not daunt a handy home-improver. The joy of earth building is its simplicity; similarly its repair need not be a complicated matter.

Ray Harrison and English Heritage are to be congratulated on this work which is a milestone in the advancing road towards a full comprehension of the best way to address the repair of cob buildings.

Peter Child

MAJOR AND STRUCTURAL REPAIRS, RECONSTRUCTION AND NEW BUILD IN COB.

The Working Group thought that it might be of interest to compile a list of cob new build and repair projects carried out in Devon in recent years. The initial trawl has come up with the following not unimpressive list.
Further additions (or corrections) to the list would be welcomed and could be published either as an addendum or included in a new complete list. Please send any additions to Peter Child.

Pre - 1990.

Late 1960's	The Sheldon Centre, Doddiscombsleigh. Cob repairs/rebuild. Material stabilised with O.P.C? - J. Deal & architecture students from Kingston Poly.
1980	Cob bus shelter at Down St. Mary - A. Howard.
1984	Re-built lean-to at Bowhilll, Exeter. Cob stabilised with hydraulic lime - English Heritage.
1987	National Trust, Killerton Estate. Re-build of cob boundary wall & other repairs - J. Vicary.
1989	Spanishlake, Doddiscombsleigh. Mass cob and cob block repairs - A. Howard & M. Vincent.
1989	Starcross. Amenity shelter in mass cob for Teignbridge D.C. - L. Keefe.
Various dates	Morchard Road. Cob garden/ store buildings - A. Howard.
Date?	Stallcombe House, Woodbury Salterton. Construction of cob wall - M.S.C. project -A. Howard.

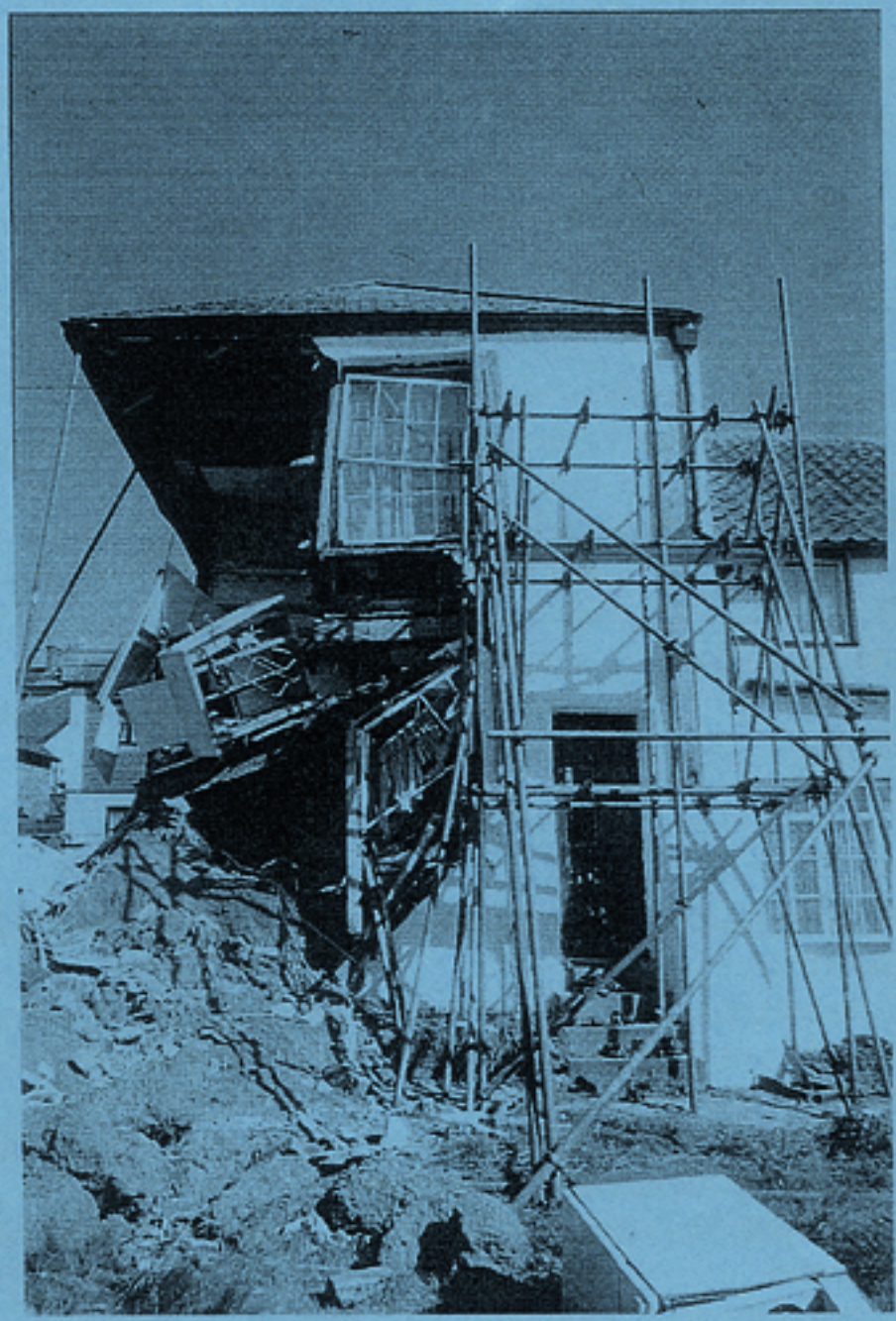
1990 - 94

Throughout:	Bowhill House, Exeter. Major cob and daub repairs using various techniques - English Heritage.
1990 - 91	Two-storey cob extension at Bushell's Cottages, Down St. Mary - A. Howard.
1991	Trusham. Cob bus shelter for Tegnbridge D. C. - L. Keefe/Artizan Builders.
1991	Colleton Manor, Chulmleigh. Repair of cob barn - J. Rhind.

1991- 92?	Town Farm, Gittisham. Mass cob & cob tile repairs - Architecton/K. McCabe.
1991?	West Emlett, Black Dog. Two-storey cob extension - R. Tapp.
1993	Landkey, Barnstaple. Cob repairs to house and barn for DHBT - J. Rhind.
1993	Cockington Court. Cob garden store - DRST.
1993	Church House Inn, Stokeinteignhead. Major structural repairs using cob blocks - Architecton/M. A. Hoare.
1993-94	Lower Tricombe, Northleigh. Two-storey extension/barn conversion in mass cob -K. McCabe.
1993-1997	Barnfield, Buttterleigh. Gable walls rebuilt in cob from building with some minor cob block work. Gale and Snowden/Richard Arnold.
1994	Bury Barton, Lapford. Major structural repairs/reconstruction using mass cob and cob blocks - L. Keefe/Dart & Francis.
1994	Vennbridge Farm, Starcross. Reconstruction of collapsed section of first floor using cob blocks - B. Armstrong. _

1995 to date

1995	Bickleigh, Mid Devon. Major repairs to cob cottage. D. Randell/Eaton Construction.
1995+	Cullacott near Launceston, Cornwall. Major structural repairs, including re-build of cob lean-to, using various repair methods. L. Keefe/D. Scott/Carrek.
1995	Fore Street, Exmouth. Extensive repairs to cob boundary wall in cob blocks and mass cob - K. McCabe.
1995	Cadhayes, Woodbury Salterton. Extensive cob block repair - K. McCabe.
1995	Beara, Pippacott, Braunton. Cob repairs - J. Rhind
1995 - 96	Great Burrow, Bratton Clovelly. Office/consulting room in mass cob - C. Brookman.
1995?	Little Ash, Throwleigh. New mass cob/timber framed farmhouse - S. Emanuel/ M.Vincent.
1996	Pottlelake, Shute. Two-storey and single-storey extensions in mass cob and conversion of outbuilding - K. McCabe.
1996	Cob summerhouse at Cheriton Bishop - J. Smallcombe & C. Brookman.
1996	Brushford Barton. Mass cob repairs - M. Jefferies.
Date?	Black Dog. Cob block repairs to barn - S. Bradford.
1996 - 97	Various new outbuildings in mass cob at Lower Tricombe, Northleigh - K. McCabe.
1997-98	Higher Thornham, Romansleigh. Rebuilding collapsed front wall with cob blocks made from collapsed cob. Extensive repairs to cracks in cob - J. Rhind/B. Glover
1997-98	Broomham Farm, Kingsnympton. Cob repairs associated with rethatching - J Rhind/ Martin Girard
1998	Flood Farm, Drewsteignton. Cob repairs to longhouse - Cob Construction Co.
1998	Haydons House, Sidmouth. New two-storey extension in mass cob and extensive block repair -K McCabe.
1999	Pamos Farm, Upottery . New three-storey extension in mass cob - K. McCabe
1999	Barn at Colway Manor, Lyme Regis. Extensive repairs in mass cob and cob blocks - K. McCabe
1999	Fursdon Farmhouse, Hittisleigh. Rebuild of front wall in mass cob -B. Honeysett/Carrek.



THERE GOES ANOTHER ONE...

The coastal area of south-east Devon, south of Exeter and between Dawlish and Budleigh Salterton, has in recent years seen a number of serious collapses of cob houses. An incident of this kind seems to occur on average every two or three years. The reasons for these sudden collapses, which are now fairly well understood, are related to (1) the type of subsoil used to fabricate the cob and (2) the presence of low-permeability cement based external renders and internal plasters.

The soils overlying the Permo-Triassic breccias and sandstones, which represent the basic geological formations of this area, are comprised mainly of sands and gravels with, in general, a relatively small proportion of fines (silts and clays). A characteristic of these soils, therefore, is their low plasticity. Because they are deficient in clay, which is the essential binder or matrix that provides the cohesion in cob walls, the soils are very sensitive to relatively small increases in moisture content. Collapse, induced by internal shear failure, can therefore occur with little or no prior warning.

The most recent of these incidents occurred on 27th April this year, at 71 Old Town Street, Dawlish. The property forms one end of a terrace of cob cottages dating from around 1820. It was altered and extended some time after 1840, with a new diagonally braced king-post roof aligned at right angles to the road frontage. A shop front, which further altered and probably weakened the structure, was inserted in the early 20th century.

The collapse, which resulted in the loss of about 60% of the remaining cob walls, took place during the late afternoon. The owner was in his study on the first floor when he heard the sound of stones falling and earth running in the roof and walls. He went down to the garden to investigate, in time to witness the collapse, which occurred in a matter of minutes.

The Victorian re-build was partly to blame for the seriousness of the failure, as the inserted first floor joists ran across the width of the building, and were bedded in the existing party wall and the re-built end wall. When the end wall collapsed, both the floor joists and the roof structure tilted, causing the south half of the party wall to rotate and fracture from eaves to floor level.
However, the principal cause was undoubtedly the presence of excess moisture in the end (west) wall, which had no verge overhang, an enclosed - probably leaking - box gutter and was also covered in a cement-rich render applied to metal lathing.
A sample of cob taken from just above plinth level showed a moisture content of 8.0% (wet weight) while a sample with the larger stones (>10 mm dia.) removed recorded 10.0%. The normal (equilibrium) moisture content in a wall of this type would be around 3.0 to 3.5%.
Footnote: The month of April 1999 was one of the wettest on record, with rainfall 50% higher than average.

L. Keefe.

TERRA 2000 - The eighth international conference on the study and conservation of earthen architecture. Riviera Centre Torquay - 10th-13th May 2000.

There has been an overwhelming response to the first announcement of TERRA 2000. Already we have received four hundred expressions of interest in attending the event, with delegates from thirty-eight countries. The ICOMOS Earth Structures Committee has selected ninety conference papers and a similar number of posters from the abstracts received recently. The titles to these can be seen on the conference web site soon (www.tech.plym.ac.uk/soa/arch/short.htm) and the second announcement out in December. I hope members of DEBA will be able to attend as it is going to be a tremendous opportunity to update on the latest in the national and international earth world. It is hoped that members of DEBA will want to involve themselves in TERRA 2000 in a number of ways. Members of DEBA's working group will form the main body of lecturers on the pre conference cob conservation course. This is a repeat of the course that the University of Plymouth and DEBA run on an annual basis. The course will take place for one week at Cockington before the conference. It may also be possible to develop and run a course concurrently with the cob course on all earth building techniques. This will be to introduce participants to techniques appropriate to the current construction industry. A feature of this course is likely to be a series of master classes and associated practicals lead by some of the TERRA 2000 conference speakers including Steve Dobson (RAMTEC) Australia, Graham North (Architect) New Zealand and Ali Mesbah (ENTPE) France. This will present an ideal opportunity to discuss the details of new earth building with experts who have had considerable success in its realisation.

The trade fair and exhibitions will also be of interest to DEBA. Perhaps some members will wish to have a stand at the Riviera centre in addition to the joint DEBA stand. The Trade Fair and exhibition will be open to the public on the afternoon and evening of Friday 12th May. During this session there will be a talk to owners of cob buildings. Paul Bedford has kindly offered his services. While the trade fair and exhibition are open to the public the conference delegates will be involved in tours of nearby cob buildings.

If any member of DEBA has a cob building within easy reach by mini bus of Torquay

and are willing to host a visit, the conference organisers will be glad to hear from you. This is particularly so if any appropriate building work is being undertaken at the time.

Likewise, at the end of the conference during the post-conference tour; if you have any suggestions for cob properties to visit in mid or east Devon, let us know as soon as you can please.

Last on the list of events is the earth building festival. Our intention for this is to construct earth sculptures with young people. Unlike the remaining components of TERRA 2000, the festival has not yet attracted funding so we are unsure as to whether this will happen concurrently with the conference.

Concerning funding, if you would like to attend the conference yet feel funding may be a problem, assistance may be available. Do contact us.

I will try to keep members of DEBA updated on TERRA 2000. It is a very significant event, made especially so by the level of interest and high standard of conference papers. And what makes it so important to us all in Devon, is that it is not only being held in our country, but it will allow us to show-case our cob heritage. So I hope DEBA members will try to be involved in whatever capacity suits their individual circumstances. Opportunities such as this rarely happen.

Linda Watson, Centre for Earthen Architecture, University of Plymouth.
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Cob Mask. County Show 1999.

Please send any comments upon this newsletter or any contributions-which would be very welcome-to Peter Child, Environment Directorate, County Hall, Exeter, EX2 4QW. 01392 382261.