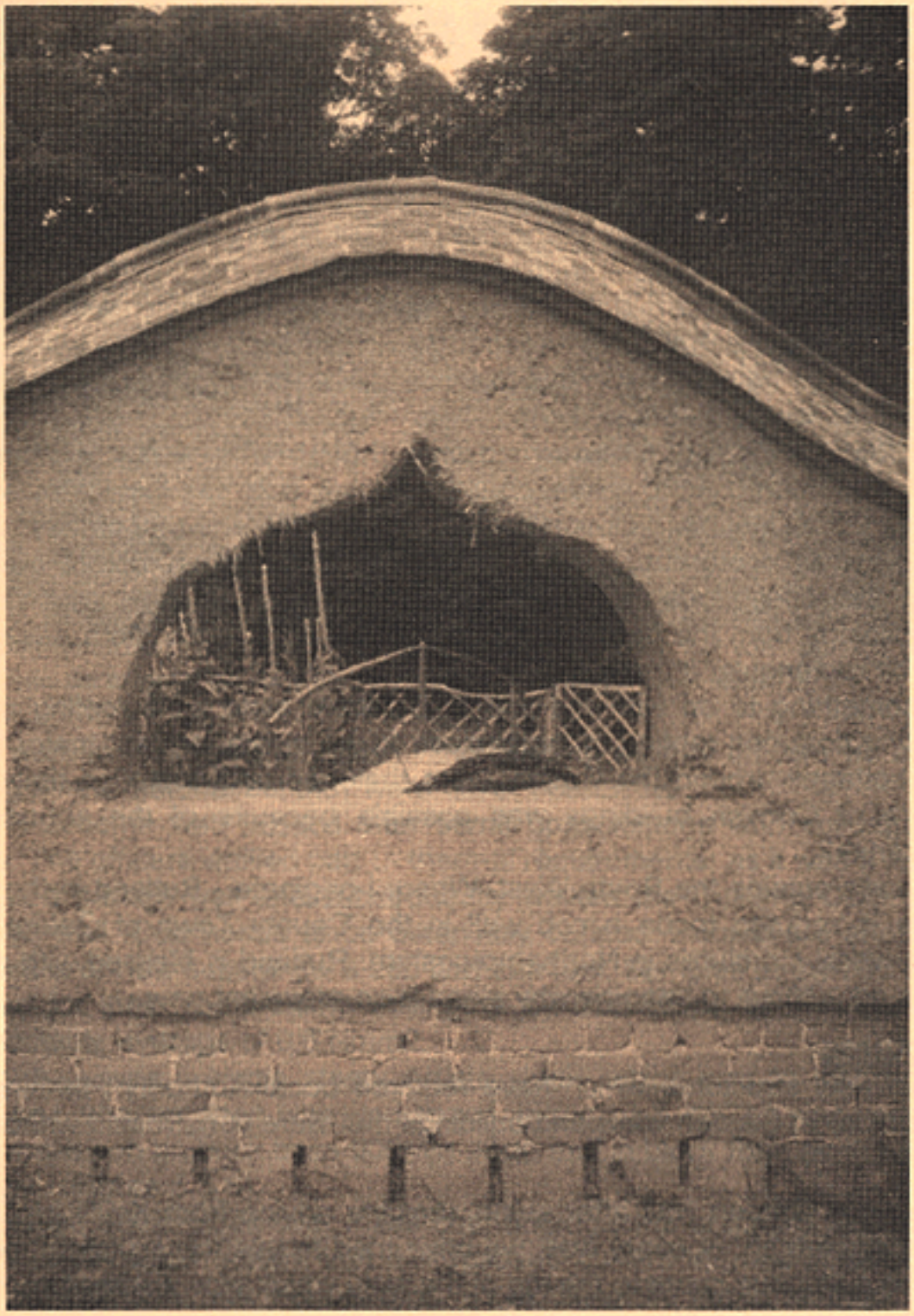
DEBA

DEVON EARTH BUILDING ASSOCIATION



NEWSLETTER 8
SPRING 2001

COB WALLING IN CORNWALL

a personal survey by M.J.Robinson 2nd. Feburary 2000.

Historical Context

Earth building in Cornwall is widespread on the 'Lowlands' of Cornwall despite abundant quantities of building stone. The upper districts -granite moors- tend to use granite as the sole building material.

The method of earth construction is 'mass cob' throughout built on a stone plinth of 18" or so, but in most areas houses have a stone ground floor with a cob upper storey. The Lizard peninsula, for instance, has stone in abundance- Gabbro, Granite and Schist -but almost all cottages and farmhouses were built with a stone ground floor and cob upper floor.

Most cob buildings in Cornwall that I have repaired show evidence of lime as an ingredient to the mass cob. My own house has huge lumps of carbonated lime in the cob the size of my fist (c.1680). The house was very close to a working lime kiln -10 minutes cart ride away.

Cob is often called 'Clob' by old timers in the region. This is an excellent name for the wet stuff we fork onto walls -far more descriptive than the name cob.

There are very few cob walls remaining which have not been obscured by wire mesh and cement render, but those few that have escaped show evidence of being beaten with sticks or rods, probably hazel. We have adopted this practice in our new work, though we use a shaped log to beat the trimmed wall rather than a whip.

Most cob walls show evidence of limewashing only, though on one building near Falmouth, a mud-lime-hair mix had been used to render coat the house. This was then limewashed.

On a recent visit to South Molton in Devon, I was impressed by the randomness and irregularity of the buildings -whether in stone or cob. In Devon the chimney seemed to built, and then an area enclosed by one continuous wall. Right angles did not seem to be important. In Cornwall however, most buildings from the farmhouse down to the agricultural store always aim to have four walls and to be rectangular in nature.

This may have something to do with the use of Delabole slate as a roofing material though Delabole was only a common roofing material close to the quarry and for major buildings. Most farmhouses and cottages around the County were thatched until Victorian times. Perhaps the rectangular nature of Cornish buildings was possible because of the abundance of stone quoins, usually granite?

I have seen cob walls outside the South West. Where I originate - Rutland in the East Midlands of England- there is reputed to be a cob wall in the County Town of Oakham, and I have personally seen several structures in Northamptonshire. Rutland is blessed with superb building limestone and it is not difficult to imagine why stone is so prevalent now.

New Cob Structures

We have built two new structures which have required Local Authority Planning and Building consent, and a number of Garden walls and buildings that were constructed without constraint.

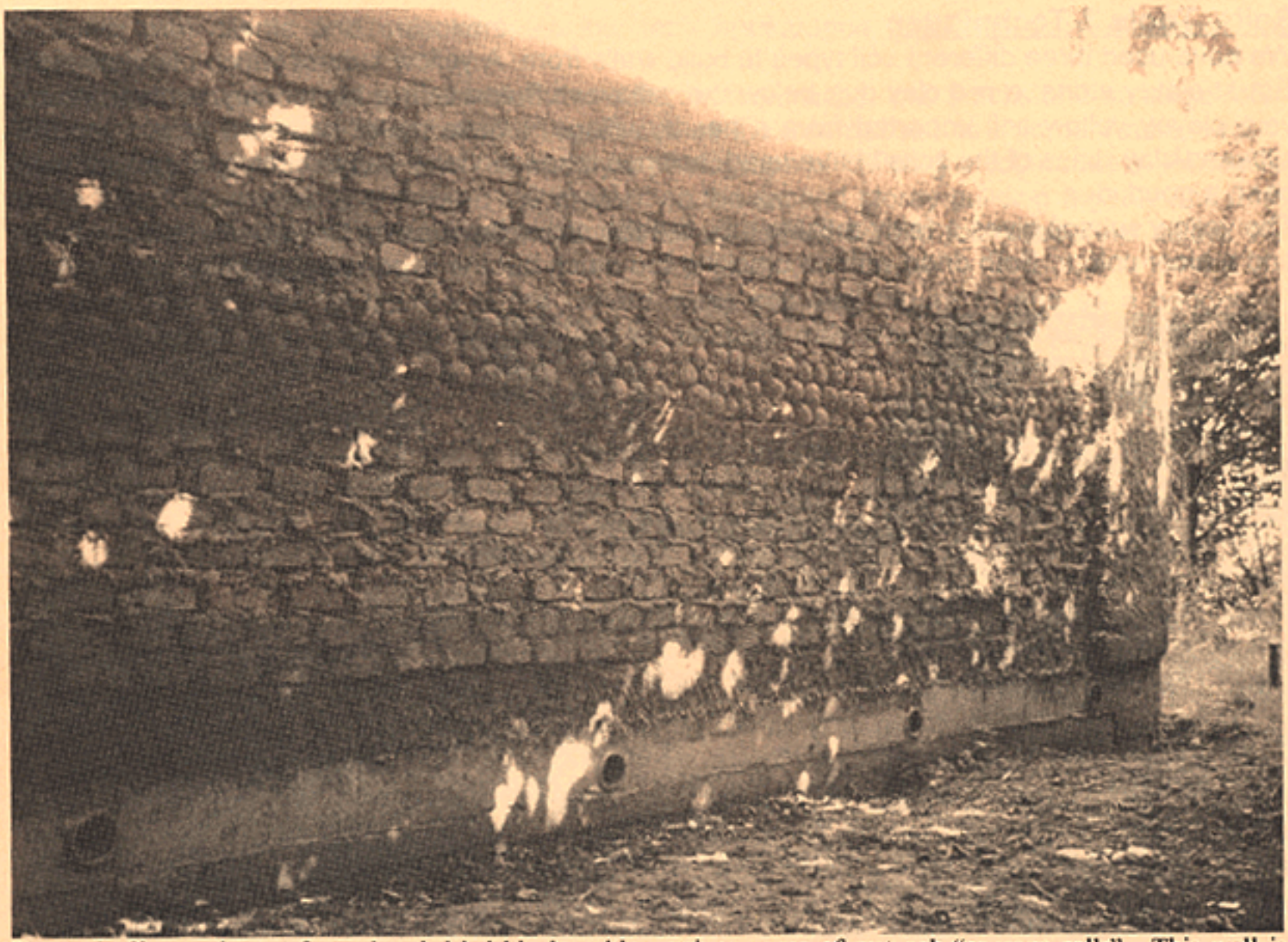
Garden Walls

We cut our teeth on a Garden wall after some sensible advice from Kevin McCabe and have built several walls since then. In every wall, we have tried to use the sculptural potential of cob. This may simply be a sinuous curve to the top of the wall- which was weatherproofed in local wet laid Delabole slate; or curved in plan as well as at roof height.

New Build- Local Authority Approved

The first project which required Local Authority approval was a reconstruction of an extension to a Grade n listed farmhouse.(figure 1 & 2) Planning Consent was granted very easily, and with the enthusiastic support of the Conservation officer, the much greater hurdle of Building Control was attempted. It was much easier than people would have you believe.

I often hear the excuse of 'Planning & Building Control', as the reason why people are unable to



Textural effects using preformed and dried blocks with a string course of wet cob "sausage rolls". This wall is 350mm thick and forms the external skin to a timber framed and insulated inner skin.

build what they want to. It is frankly rubbish. The Building Control officers were understandably cautious, it being a new material but they were never obstructive.

Theoretically, the scheme was passed after some consultations with colleagues from Devon District Councils. The officers waived part L- thermal requirements, as it was a rebuild.

Practically, I built a garden wall and subsequently walked the Building Control Officer on the newly constructed wall .Cob needs to be ostensibly defined. People are shocked at just how strong a cob block is or how substantial a cob wall can feel. Samples of my cob blocks were also sent to be tested for their 'compressive strengths' by **Bob Hope** of Plymouth University and achieved a respectable average of 0.6 Nmm2.

The second structure was a single storey Artists studio which was to incorporate a previous building to form an L-shaped open plan workspace. (Figure 3 & 4) Cob was used in two guises - a curved end in mass cob on brick base 500mm thick; and in block form as the external skin to a timber-framed wall. (Figure 5 & 6).

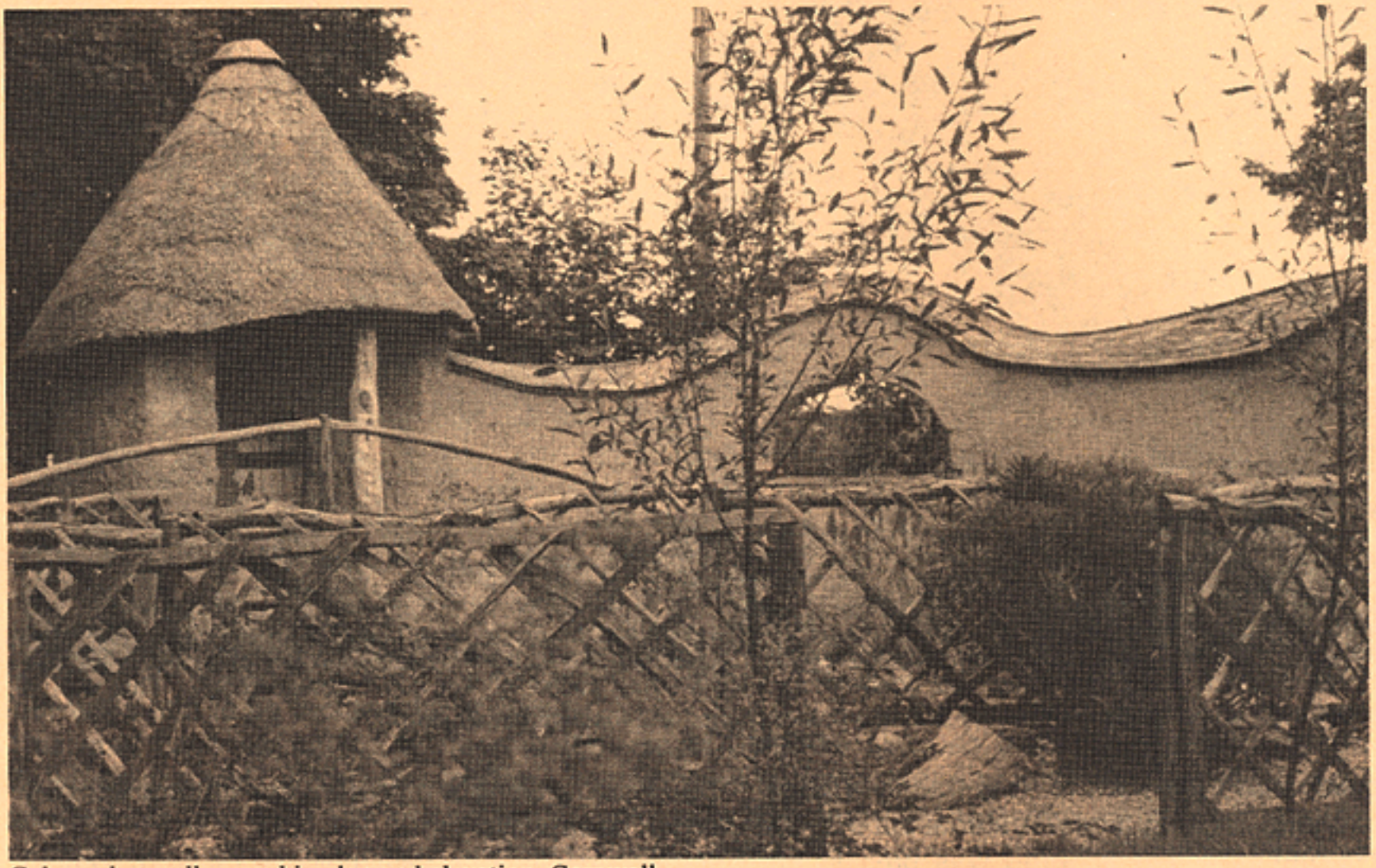
The latter had certain advantages over mass cob: amongst the standard studwork was 100mm of glass fibre insulation which meant that it surpassed current thermal insulation requirements .The mass cob wall failed current thermal regs, so by using the target method, the bulding as a whole could then satisfy the requirements.

The curved end was chosen for aesthetic reasons, and mass cob was the obvious material to build it in. My guess is that it was probably fairly competitive on price with conventional concrete blocks but had the softness and rightness of a vernacular material. The building was roofed in new Trevillet scantle slate, the slates diminishing from 14" to 6" at the ridge, forming a cone.The building was limewashed only, as it faces east, and the cob block wall was left untreated as it is protected by a large hedge and extensive overhang.

Soils, Tools & Techniques

We have used three different soil types to build walls from. A yellow subsoil which blends in with Schist slatey stone; a red clay dug below the yellow stuff and with a higher clay content; and a very clayey yellow soil imported from a nearby village. I have never bothered to analyse the silt/sand/clay ratios of the soils I have used- science takes too long -but in hindsight it might have been a good idea.

The yellow subsoil gives a fairly reliable mix, but the red is far superior to use - it has more body and a nicer colour. Both dried without cracking too much but the imported clay cracked awfully



Cob garden wall curved in plan and elevation, Cornwall.

during summer drying. It seems to me that the monitoring of the drying process is far more crucial than the mixing. Most clob on the Lizard is from yellow stuff or an incredible orange clay that produces the most dramatic wall.

All our clob was mixed in a pit by a local]CB driver with his backhoe. A typical $3m^3$ mix would take between two to three hours. We used whatever type of straw was available and would keep adding straw until it 'bulks up'. I believe that this method of mixing produces a 'wetter' mix that the 'driving over clay & straw on concrete with tractor' method as favoured in Devon.

We rarely achieved heights of more than 450mm in one lift, possibly because of the wetness of our mix. We found the best tool for putting the wet cob on was a 'lady' or 'border' fork, and when doing corners or window reveals, it was prudent to tamp each lump on a hard surface prior to patting it down onto the wall.

I once made a miracle mix with a farmer near Newquay- we drove bullocks around a pen over the clay and straw for about half an hour before mixing with a front loader. The dung clearly improved the stickiness of the mix, and 600mm lift was easily achieved.

Latterly, we have got into the habit of adding an aggregate such as 3/4" to dust to the mix -it cracks less, dries quicker and is easier to put on with a fork.

Although all the historic cob I have come across has lime in it, we never added any lime.

To finish the wall, we paired away with a spade after a few days, and then a few days later beat the wall with a stone age club fashioned from a 6" diameter log .This crude tool proved a real

favourite with clients and onlookers, its low tech appearance speaking volumes about the process.
Apart from the usual mass cob, we tried two different techniques: cob blocks and sausage rolls. The cob blocks were laid 350mm thick in liquid cob as the external skin to a timber framed wall .
The 'sausage rolls' technique was inspired by a photograph of building a cob house in Berkshire in the '20s. This photograph showed the 'master' on the second storey building a gable end from stacked rolls. These rolls were made and thrown up to him by his four labourers below. No scaffolding was required.
We used this method for the top of the curved mass cob wall (figure 5) and as a decorative feature in the middle of the cob block wall. The sausage rolls would make an excellent string course amongst mass cob.

Cob- an Architects Dream?

The really exciting thing about cob is that interesting Architectural devices can be added to walls particularly easily and without large increases to the cost of a particular project. As an architectural designer, cob offers unbelievable scope and freedom when compared say to concrete. With concrete you can cantilever, but unless you are Gaudi, one is always dependent on formwork.
Cob was used in the past for two good reasons - it cost only farm labour; and it was pleasant to live in. It was used functionally.
I have been trying to use cob 'expressively' and let it do things which clearly 18th.Century farmers were not interested in. We are using the knowledge of alternative methods of cob construction such as cob blocks, sausage rolls etc and our greater architectural knowledge to create something new which nevertheless sleeps happily beside vernacular buildings.
In building new structures I am always trying to do something new and contemporary (I fear the criticism 'pastiche'). It is possible to play with cob and produce a dazzling array of textures with very little effort. For instance:

- a wall can be penetrated by any shape or arch, however complex, for it is as easy to construct an ogee arch as say a semi-circular one or indeed a rectangular opening.
- cob bricks can be used to create rhythmic bays or niches as a wall diminishes in width
- Cob bricks or sausage rolls could be used as string courses; or as stripwork to create arched shapes in a way similar to Anglo-Saxon churches.
- Sculpting with spade, hand etc.
- Textural effects created by beating the wall with a shaped club.
- Imprinting the wet wall with a wooden mould.
- And much, much more besides

Lime & Liabilities

The worst thing about cob is limewashing, lime rendering and removing bloody cement render .
Thank God for the new hydraulic lime from Bordeaux -it makes limewashing just about bearable.
As for lime rendering, I have found the process extremely messy and to produce an imperfect finish. A Tyrolean throwing device has proved less messy, giving a more consistent finish to harling it on, but I always find holidays that have to be pointed in afterwards.
Lime render has fallen off my own house the year after it was put on, where it is extremely exposed. How can I tell customers to pull off their cement render when I cannot rely on either the lime render or a customer limewashing his wall regularly?
Is it OK to use wire mesh & nails & hydraulic lime render? This gives the smooth skin that some people desire for their house. The texture of decay, (or decay plus the removal of the existing cement render) is not to everyone's taste. Please help.

Future Projects

I haven't had much success building new cob structures for other people, and so in future I shall probably confine myself to advising and empowering self-builders.

It would be particularly pleasant to help a community build a place for themselves out of clob - all of that community from the children upwards could be involved. Cob walling only requires one person's knowhow.
For myself, I would like to construct a bridge from mass cob. The bridge would be the entrance to a garden, and would span over water with concrete or granite treads that would also act as the structure's roof. Only believers would dare pass over the bridge to paradise beyond.
What could the maximum span of the bridge be? I reckon twelve feet. Should it be reinforced, and if so reinforced with what?

My other crazy project for the future is Cob Man. Cob Man is a lottery-funded head, thirty-five foot high and twelve foot across. A massive sculpted lump for the South West.
He would have a temporary roof of tin until he dried (several years) and then the scaffolding & roof would be removed and cob man would gracefully return back to the Earth from whence he came. Decay, mortality, these are beautiful things. I think it would take at least a hundred years for him to disappear although vandalism is bound to hasten his demise. My wife reckons he should be placed behind barbed wire like some oversized religious relic in a Catholic Church.

Cob Related Work

New work so far has been confined to my own premises.
Although I recently won planning permission for a new open fronted linhay, it seems very unlikely ever to be built. The client started to say things like 'economically justifiable' so I knew that particular dream was over. You build in cob because it is beautiful, not because it makes economic sense.
Restoration work has been at two sites - at Trelaske Farm, Newquay where a whole farm complex was abandoned by the tenant in the '70s but who is now trying to slowly renovate the whole complex and move back into the cob house. We did some rebuilding of barns to give him a taste for the work, but the whole project is massive and farming is in crisis.
And secondly, for my neighbouring farm, I added onto an existing cob wall and created a facade for a farm shop.
When we opened our garden on the National Gardens Scheme we had many admirers of the various garden walls, but no takers. It seems that very few people have the patience, cash or courage to build a cob wall.
looked.
The second structure was a new single storey building built as an Artists studio. Mass cob was used for a curved end, and cob blocks were used as the outer skin of a timber-framed cavity wall construction. This latter walling method surpassed current thermal insulation requirements (part L of the building Regs), whereas a mass cob wall of reasonable thickness (around 600 mm) does not. Thermal regulations proved to be the greatest stumbling block for a new building.
Our first cob walls were garden walls - an invaluable learning experience - and we have built several since. Each wall has been an opportunity to explore the sculptural and expressive potential of a mass cob wall
This may simply be a sinuous curve to the top of the wall- which was weatherproofed in local wet laid Delabole slate; or curved in plan as well as at roof height; a wall can be penetrated by an arch, however complex, for it is as easy to construct an ogee arch as a semi-circular one. And we have also used cob bricks to create rhythmic bays or niches as a wall diminished in width from 750mm to 500mm.
Future projects include a thatched barn & linhay- planning permission has been granted. I would like to build a cob bridge as a garden feature over water as an experiment to see just what spans could be achieved, probably around 4m. Only believers would cross the bridge!

Mathew Robinson -Cob builder, Oak Carpenter & Architect
Tel (01326) 221339 Caervallack, St. Martin, Helston Cornwall

NEW COB HOUSE

Kevin McCabe has recently obtained planning permission for and commenced work on a new cob house on the outskirts of Ottery St Mary in east Devon. It is an ambitious project with cob spiral staircases and a thatched roof. Anyone interested in participating should contact Kevin on 01404 871487 or email kevin.mccabe@ntlworld.com .He is planning to hold open days for people interested in gaining practical experience in building a cob house on each and every fine weather Saturday during May and June 2001.

NEWS - FIRST ANNOUNCEMENT

OUT OF EARTH III

Dartington Hall Conference Centre

3rd & 4th September 2001

CEA (Centre for Earthen Architecture) at the University of Plymouth, ICOMOS (UK) Earth Structures Committee and DEBA will be hosting an intensive twenty four-hour conference beginning at 16:00 on 3rd September. Its aim is provide an opportunity for all those involved in earth building in the British Isles to exchange recent experiences, new projects, growing knowledge and research. Two or three keynote speakers from overseas will be invited to participate.

Conference fees are likely to £130 to include all meals and overnight accommodation. A reduced day rate for local delegates is likely to be £70. Whilst sponsorship is unlikely every effort will be made to attract funding to reduce the conference fees.

Please contact CEA if you are keen to participate. Whether we publish referred conference papers will depend on the participants. So if you wish to attend and would like to submit a paper forming part of a possible publication do let us know. It would be good to have such a record of the event.
We welcome any other comments to ensure the conference is a success.

Linda Watson
CEA (Centre for Earthen Architecture)
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TERRA 2000

Linda Watson, University of Plymouth,
Centre for Earthen Architecture. (01752 233608)

The diary of events associated with the conservation of buildings has been extensive last year. Those with the funds and the time have been spoilt for choice. TERRA 2000, the eighth international conference on the study and conservation of earthen architecture was a major event within the conference calendar which brought nearly four hundred delegates representing fifty countries together in Torquay in May. A large number of good quality conference papers and posters represented the current international knowledge base on earth as a building material. The organisers English Heritage, ICOMOS(UK) Earth Structures Committee and Centre for Earthen Architecture, University of Plymouth, were keen that the subject of earth was covered as diversely as possible. Hence conference themes ranged from archaeology, through conservation, to earth as a sustainable contemporary building material. A comprehensive conference publication(1) allows access to that which was disseminated but sadly without the hundreds of excellent illustrations from sites across the world shown as slides during the event.

A travelling exhibition was launched at the conference 'The British Earth Building Exhibition' (2) which focuses upon the history of the earth building regions of the British Isles and the possibilities of earth in building today. Funded jointly by Millennium Festival Fund/Heritage Lottery Fund, English Heritage and the Centre for Earthen Architecture, University of Plymouth, it is available for display across the country. The exhibition has already been shown at the Architecture Centre, Bristol, the Museum of Welsh Life, Cardiff and the Centre for Alternative Technology. More comprehensive information is available in 'Terra Britannica' (3), the publication, which accompanies the exhibition. The exhibition is complete with screens and integral lighting and can be borrowed from the Centre for Earthen Architecture. Laminated posters only from the exhibition will be available for hire from ICOMOS in May (4).

However it was TERRA 2000 fringe events which interested the media in May, in particular the earth sculptures in the grounds of Cockington Court near Torquay. Here two groups of youngsters, one led by Peter Mold, an earth builder, the other by Rainer Warzecha, an earth artist, worked for one week to create an external oven for camping and picnics and an enormous seat reminiscent of a cross between a Buddha and a sphinx. Nearby Jill Smallcombe and Jackie Abbey created a seated woman in the walled garden adjacent to the historic house.

The construction of a new cob building also at Cockington got off to a good start with the assistance of delegates who attended a pre conference week-long cob conservation course (5). Again delegates came from across the world to find out about the techniques which have fashioned so many British earth buildings. We were delighted participants returned to countries such as New Zealand, Zimbabwe, India, Bulgaria and Ireland with cob repair techniques developed by Larry Keefe and other members of the Devon Earth Building Association to assist in the conservation of their own built heritage.

Whilst organising the conference and associated activities was an enormous undertaking, it has created an excellent platform of exchange of knowledge for experts involved in earth building and an opportunity to raise public awareness in this country, particularly through the exhibition and publications.

1. Sterry N (Ed) TERRA 2000 Preprints. James and James
2. British Earth Building Exhibition can be borrowed from Linda Watson Tel: 01752 233630 email l2watson@plymouth.ac.uk
3. Hurd J & Gourley B (Eds) Terra Britannica, James & James, 2000.
4. Contact Peter Messenger to borrow the poster at peterme@carlisle-city.gov.uk
5. The Cob Conservation Course runs every year at the Centre for Earthen Architecture, Plymouth School of Architecture. Contact Linda Watson for details.

Linda Watson, B.Sc., B.Arch., Dip.Arch. Conservation is a registered architect who co-ordinates the activities of the Centre for Earthen Architecture.

BOOK REVIEW

TERRA BRITANNICA: A celebration of earthen structures in Great Britain and Ireland.

Edited by John Hurd and Ben Gourley.
ICOMOS/ English Heritage 2000 59pp ISBN 1 902916 13 1 Price £14.99

Terra Britannica was produced to accompany the TERRA 2000 Conference (about which see elsewhere in this newsletter). It follows the elegant format of English Heritage's technical productions but is a joint publication between English Heritage and ICOMOS UK, and in particular its UK Earth Structures Technical Committee on which three DEBA Working Group members sit. Terra Britannica sets out to describe the main areas of traditional earth building in the UK, as well as having short chapters on earthworks and on earth in the World Heritage context. Each chapter sets out to describe the history of earth building in that area and its present state of conservation. It concludes with a chapter by Linda Watson on British earth building in the new millennium. There is a very useful bibliography and it is excellently illustrated with drawings both colour and black and white photographs. The regional chapters, each by local authors, cover Wales, the Solway Plain, the East Midlands, Scotland, East Anglia, Wessex, Devon and Cornwall, and Ireland. With the exception of the Irish chapter which is disappointingly brief, each contribution presents a clear picture of the nature and state of the various local traditions of earth construction to be found in the British Isles. Although some of the chapters highlight problems in the conservation of earth buildings in the UK, on the whole this book presents a picture of an improving situation for them in the future. Indeed the fact that it can be written so comprehensively at all reflects a far more widespread awareness of earth building than would have been the case only a few years ago. It is interesting in this respect to compare it with Ray Harrison's seminal work of 1984 in the Transactions of the Ancient Monuments Society no 28. This short work is much to be recommended to anyone with an interest in earth building.

Peter Child

Contributions to the DEBA Newsletter are always very welcome. Please send any material to:
Peter Child, Environment Directorate, County Hall, Exeter, EX2 4QW. 01392 382261.
pchild@devon.gov.uk

COB SCULPTURE

Jill Smallcombe

COB SCULPTURES

In the summer of 1999, Jackie Abey, a painter, asked me if I would like to join her in making some cob sculptures for the Chagford Arts Festival. Jackie had heaps of old cob which had once been the gable end of her barn so the plan was to re-use it, plus any other materials which were lying about. We worked on the sculptures every Thursday for ten weeks.

With simple sketches and minimal discussion we set to work, alternating between figures and abstract sculptures to explore the possibilities. All mixing was done by foot.

THE FIGURES. We weren't sure whether we would mould the cob as we went along or carve it back later . It soon became clear that building in lifts with no armature and moulding arms and legs as we went along was much the easiest way to work. We liked the idea that the sculptures were made of earth and would eventually return to the earth. We made a kneeling figure which was built straight off the ground in a fairly exposed place and have watched it slowly changing and disintegrating during the winter. The process has been slow and interesting, undergrowth is now closing in around her and grass is growing over her knees. We also made other figures which were protected by arbours made of reed mats and logs were used as a plinth. These are still in perfect condition. In October/ November we built a sculpture inside the studio, which dried slowly over the winter. We were asked to show it at Broomhill Sculpture Garden near Barnstaple and were filled with trepidation at the thought of transporting a 5 ft high sculpture on the back of a pickup truck. We need not have worried, despite some very bumpy tracks and winding lanes it survived the journey completely intact. Strong stuff, cob! It can now be seen in a wooded area by a lake (not usually the best conditions for cob) and it will be interesting to see how it looks in a years time.

ABSTRACT CONES. The 8 ft cones were made in lifts and pared back in exactly the same way as a cob wall. We used some old pieces of concrete as a base but they were not protected from above. The cones have survived the winter remarkably well and show very little sign of wear and tear despite being left exposed to the elements. We are now working on a sculpture at the Mythic Garden in Chagford which is a group of three cone shaped figures about 9 ft high. These will be finished soon and can be visited from 15th May.

NOTES. We have found that building with freshly dug subsoil is a lot easier than using recycled cob which, despite new straw is rather crumbly. However a mix of one third recycled and two thirds new subsoil plus plenty of straw works well.
We have also discovered that cob lends itself to rather large, solid sculptures and figures with very short thick necks!

Jill Smallcombe

Mythic Garden Stone Lane Gardens, Stone Farm, Chagford, Devon Tel: 01647 231311

Broomhill Sculpture Garden, Barnstaple, N Devon Tel: 01271 850262

Jackie Abey & Jill Smallcombe 01647 281282 / 24145

CHILDREN'S EARTH BUILDING PROJECT, DARTINGTON SCHOOL - 2000

Manufacturing earth blocks.

Wattle and Daub