

Newsletter

Building Limes Forum Ireland

Comments and articles in this newsletter do not necessarily reflect the views of the committee or editor.



Building Limes Forum Ireland is a community of lime practitioners, specifiers, suppliers and producers of lime. The Forum exists to encourage expertise and understanding in the appropriate use of building limes, and education in the standards of production, preparation, application and aftercare. Building Limes Forum Ireland is connected and affiliated to Building Limes Forums across the world.

Editorial

Welcome to the first Building Limes Forum Ireland Newsletter of 2015. This issue coincides with some changes for the BLFI, including a new chairperson, a new editor for the newsletter and a new AGM date. Lisa Edden, in her commentary thanks the outgoing Chair, Kevin Blackwood, while also giving an update on recent activity, current issues and upcoming events. Similarly the new newsletter editorial thanks Hugh Dorrian who has recently stepped down as editor. During his long term which commenced in 2007 he has produced many newsletters that were always informative, positive and forward thinking, a challenge during the recent difficult years we have all experienced. Thanks also to all those who have contributed articles, graciously and promptly, making this editorial debut so much easier. Please enjoy this newsletter which includes a great variety of topics from all over the country, useful information and news. There is a programme of all confirmed events on the back cover with more planned. Although we all have to 'make hay while the sun shines' hopefully members will find the time to attend some if not all of the upcoming events, making the most of this forum. Finally, as always we welcome any members' suggestions on ways to improve the BLFI.

Oiseen Kelly

Traditional Building Methods and Post-Disaster Rebuilding

Those of you who attended the Lime Slam in the Dublin Civic Trust in February, will have heard Stafford Holmes talk about his work with HANDS, an NGO in Pakistan. He and Bee Rowan have been assisting with the repair and reconstruction of rural buildings as part of a flood relief programme following the devastating floods of 2010 and 2012 in the Indus Valley. The current BLF (UK) Newsletter (May 2015) carries an article detailing their great efforts in developing manuals and providing training for building with lime and lime stabilised soils. This is part of the lime revival afoot in Pakistan and a drive for sustainable rebuilding of homes by communities.

Given the recent disastrous earthquakes in Nepal and terrible loss of life, the huge challenges of rebuilding villages, towns and cities are all too apparent. Many historical structures survived the last major earthquake in 1934 and the recent ones with minor damage. This was thanks to, in some instances, 400 year old earthquake-safe technology which used brick, stone or mud, and lime. Experience in nearby Kashmir after the 2005 earthquake has shown that post-disaster reconstruction using low-cost traditional timber and masonry construction provides sustainable structures with a natural flexibility and resilience. With salvage from the rubble now slowly



Photo: Nepali Times

underway the reuse of brick, stone and timbers indicates that the rebuilding has already begun. In order to address local construction flaws associated with the use of unfired brick, clay mortars and masonry structures that lack vital structural timber members, education in building methods will be critical. Understanding traditional building materials and skills and supporting their revival through appropriate training, holds the key for sustainable rebuilding of rural homes. This is also necessary for the appropriate repair of the many damaged historic structures and monuments.

There is a long and difficult time ahead for the Nepalese people in rebuilding their communities and structures and securing a safer future for all.

Comment From The Chair: Limey Now Convening The Building Limes Forum Ireland

Dear fellow lime enthusiasts,

I welcome you to this newsletter and also our AGM (21st May 2015). Since January I have been chair of the Building Limes Forum Ireland. I hope I can do the role justice and further the good work of the previous chair and so, I thank my predecessor Kevin Blackwood and look forward to following in his footsteps and walking the very well prepared ground before me.

Limey I am but as with the derivation of the word most of my contact with lime in the UK was with the green fruity sort. I worked on the fringes of conservation in London in the 1980's when the 1:1:6 mix was all too prevalent and I was also involved in building new solid brickwork construction using lime based mortars. I did not however participate in any Building Limes Forum activity until 1998. Then based in Dublin I was cajoled by a dear architect friend into travelling to the Building Limes Forum (UK) conference in Newry. I still clearly remember many of the lectures and discussions and the realisation that there was another material - the white inorganic sort - to be understood. Seventeen years later my understanding is still growing and having to envelop yet new/revived lime types and processes. I hope you will also find some useful examples and updates in the pages over.

So what has the BLFI been up to in the recent months and what have we planned? A new Articles of Association which will be voted on at the AGM have been a while in hatching. If voted in, there will not be any change to the way the BLFI conducts its business on a day by day basis, however, instead of the board of Directors being separate it will be your committee so paperwork on a weekly basis will be far easier. The founding four who have been directors all this time are still all immersed in the promotion of lime and two are part of the current committee. I thank them with all my Limey heart for steering BLF Ireland through the last 10 years and I'm sure you join me. They are Richard Good Stephenson; Grainne Shaffrey; Grellan Rourke and Kevin Blackwood. May the new management do as well as these dedicated four.

Hot-lime Mortars are the hot topic. Recent publications from Historic Scotland and SPAB confirm that everyone else and not just Ivor McElveen and Pat McAfee are talking about them and realising they too need to understand them. We here in Ireland are close behind the Scots and making the English (including myself!) sit up and take note. So look out for the next day at Drimnagh Castle on June 4th 2015.



If you've never been to Drimnagh now is your chance to see this hidden Dublin jewel; immerse yourself in the past and bring yourself up to date on all matters lime.

Training / apprenticeships /CPD

We all need it; some of us crave it and we all find it hard to find the course tailored to our precise requirements. I'm not sure that's going to change but the Heritage Council have approached the BLFI and we are looking together into trying to set up lime modules at level 6 ++ here in Ireland. When that is in place we won't have to travel to West Sussex (my home county) or Fife, Scotland or further afield every time we look to improve our knowledge or for a qualification in the use of lime mortars or plasters. We're at the stage of gathering the trainers so if you're at all interested in training as a trainer please talk to Pat McAfee or myself.

Your current hard working BLFI committee is :

Lisa Edden	Chair
Grellan Rourke	Company Secretary
Una Ni Mhearain	Treasurer
Shane Nolan	Membership
Manfredi Anello	CPD / Training
Kevin Blackwood	Bursary
Helen Hossack	Northern Ireland
Oiseen Kelly	Events & Newsletter
Joe Kirwan	Technical & Standards
Patrick McAfee	Training
Ivor McElveen	HLM Project liaison + Tech&Stds
James Powell	Webmaster

Lisa Edden

My Bursary Experience by Eoin Madigan

Last year I was lucky enough to be 1 of 6 people chosen to go on the William Morris Craft Fellowship tour of the UK. The scholarship is granted to craftspeople and professionals who are involved in and passionate about conservation. Aided by the generous bursary granted to me by the Building Lime Forum Ireland my Fellowship tour will go down as one of the highlights of my life so far. As the Fellowship is run by The Society for the Protection of Ancient Buildings we started our tour at SPAB headquarters in Spital Square in central London. From there we travelled the length and breadth of the UK visiting places like Hampton Court Palace, Canterbury Cathedral, Croxley Great Barn and the vernacular cob houses, hall houses and tower houses. We also got to meet, work and sometimes stay with some of the best craftspeople in the conservation world, Stafford Holmes, Rory Young and Bill Revie to name but a few. The 6 of us chosen were made up of 3 architects, a cob builder, a timber framer and myself, a stone mason. Travelling alongside the 3 scholars gave me a unique opportunity to see what made them tick and visa versa. This I feel helped us gain a mutual respect for each other and helped break down the barrier that sometimes exists between craftspeople and professionals. It also highlighted the importance of communication between all involved in historic conservation. While on the Fellowship I saw lime being used in nearly all its forms, from putties to NHLs to hot mixes. The most important thing I took from this is that when lime is correctly specified and correctly used it is an amazingly workable, durable and breathable material. I personally feel that unless professionals and craftspeople are unified in the correct specification and use of lime we are wasting our time and can



Hampton Court Palace. (Photo: SPAB)

even cause damage to the structure we are working on. I also feel that NHL 3.5 and 5 are used far too much due to fear of problems and failure. To these I say that I have seen and worked with people in the Highlands of Scotland using unmodified hot mixes with great results. If it can last there it can last anywhere! With the weather warming up again I'm getting in a giddy mood and as the 2015 lime season is well under way, I would like to say best of luck to all lime users this year. I would also like to thank again all in the BLFI for their support and guidance throughout the years. I will be forever grateful.

Bursary recipient Dr. Jason Bolton

1. Dion northern Greece, partially submerged 2nd Century AD Sanctuary of Isis, 2. Repairing mosaic & marble floors, Imperial Roman market at Dion, 3. Analysis of a Roman lime mortar at Dion.



Californian Dreaming - An Irish Round Tower Build in Northern California using Hot Lime Mortars by Patrick McAfee,

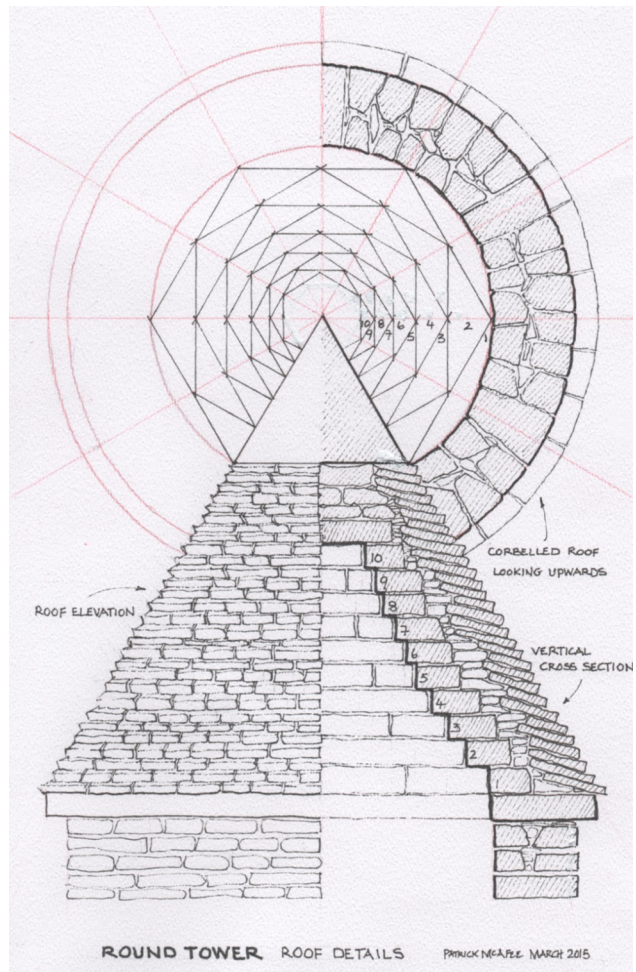
The Stone Foundation (www.stonefoundation.org) is a US based organisation established in the year 2000 when I first joined and went over to give a talk and demonstration of lime mortar in Santa Fe, New Mexico. The organisation was established by one man, Tomas Lipps, a stonemason who had an advisory council on which I sat but basically Tomas was the foundation. Parallel to running a yearly symposium in different locations throughout the US and once on the island of Mallorca he produced Stonexus, the best stone magazine around. Last year a more formal organisation was established with a board of directors, not for profit status and an emphasis on training and joining up those who work in the world of stone. I sit on that board.

The big event will be in January 2016, kicking off with a tour of new and old stone buildings, landscapes and sculptures in San Francisco with lectures, a tour of the geology of northern California and then talks, demonstrations and workshops about 100 miles north at Gualala, a coastal town.

The Gualala Arts Centre will host a dry stone project and be the centre for the talks. A number of miles inland from there is an estate with a number of recently built follies one of which is a round tower commenced January this year using black granite for door and window surrounds, string courses and spiral steps along with a flat schist (Sydney Peak) for general walling. The mortar is hot-lime - quicklime, brick dust and sand. It is envisaged that the completion of the tower will take place next January, 2016, after another build sometime later this year.

In January this year at the commencement of the project a couple of standard cement mixers were used, one without fins. Neither of the mixers proved satisfactory or to be any quicker than mixing by hand; they were in fact slower and were abandoned in favour of using the hoe and barrow method instead. The mixers spat out hot-lime liquid at face level and were considered a nuisance by those given the task of mixing.

To keep the masons supplied with hot-lime mortar of the right consistency, it was necessary to try and co-ordinate two people mixing with 4 people laying. If too much was mixed in advance it stiffened up and had to be re-wetted and mixed on the boards by shovel, which was time consuming. If the supply of mortar was slow then the masons were not productive. Everyone wore safety glasses, there was initial surprise at the heat of the mortar by the



stonemasons but very shortly it was like second nature to them and they were calling for it hot rather than cold.

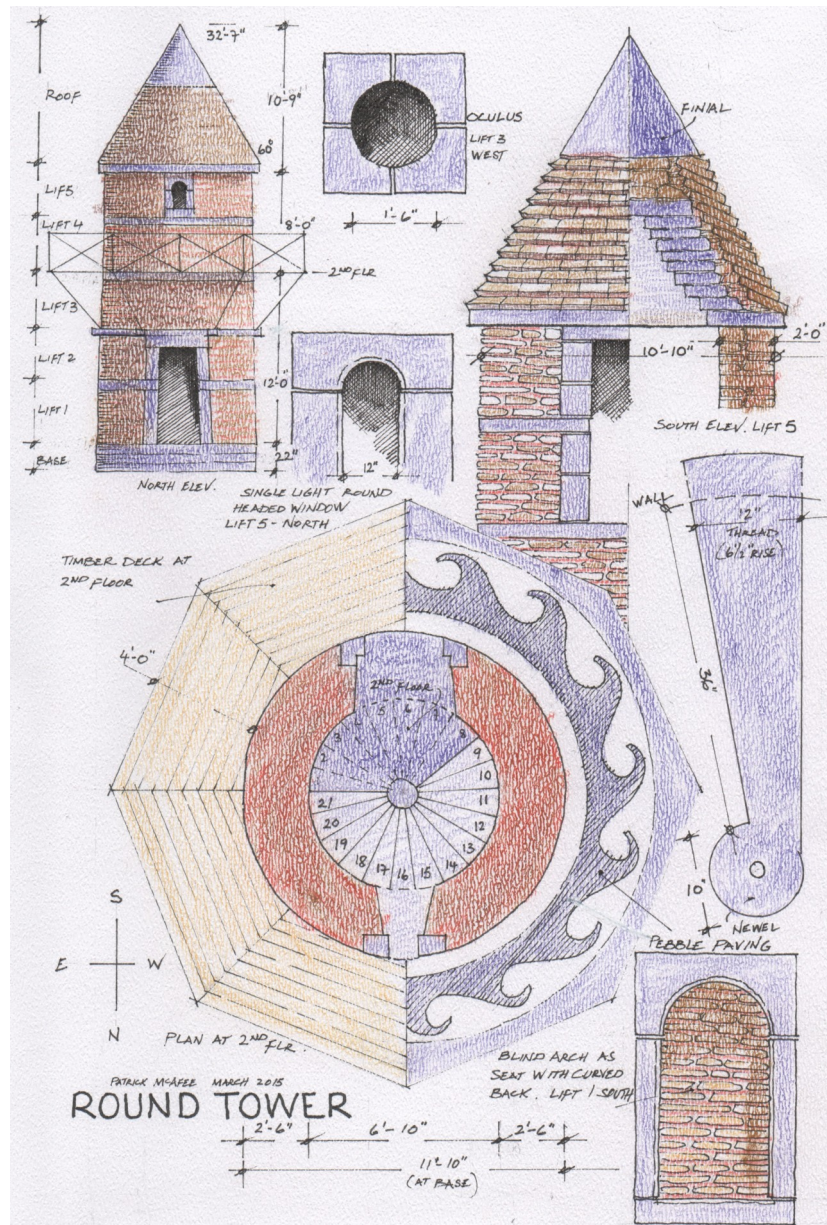
The mix used was 1 part quicklime to 1 part brick dust to 3 parts sand. Getting quicklime to California proved to be extremely difficult; it came from the mid-west by train and arrived late. It was granular, in 2,000 pound sacks. The brick dust used as a pozzolan came from southern California. There was no time to test its reactivity with lime, it may be low or non-existent because it's likely to have been fired at higher than optimal temperature to create a pozzolanic reaction but if so, it will simply be part of the overall aggregate content. With Mediterranean style weather I don't see a problem. The mortar was pink in colour, finished flush and beaten with a churn brush to expose the aggregate. A factor controlling progress was stonecutting; all cut stone components had to be finished in advance of the masons laying them. A tripod with pulley and chains lifted the heavier components into position. The scaffolding used was timber putlog, with the putlogs resting in holes left in the wall as the work proceeded. This type of scaffolding can take on the shape of any building and get the masons in close to their work unlike most modern, modular types.



Door and spiral steps



Steam rising from hot-lime mortar



The round tower has an external batter of 1:40 and is plumb internally. A trammel was used from the dowel inserted in the centre of the newel of each spiral stone step. I cut a 1/2 inch off the horizontal trammel every time we reached 20 inch lifts in height. The centre of the newel was aligned from crossed string lines from four quadrant points established on the external circumference of the tower. Initially to determine the centre of the newel we used a string line dropped with a plumb bob from a horizontal line high in the air stretched between two redwood trees.

Even the mildest breeze coming in off the ocean interfered with readings and this idea had to be abandoned. At night we'd watch individual episodes of the BBC

'Secrets of the Castle' set in Guidelon in France, an excellent programme that everyone on the project could identify with. One of the stonecutters on the project was French and came from near the castle.

The roof will be dry laid on a corbel style that I like and have used before, diminishing polygons for lack of a better description. Both ends of each corbel occur over the wall, course by course for as long as practical before the top corbels eventually have to fly the nest but have the comfort of sitting on structurally sound corbels beneath. Covering the corbels is the 60 degree conical surface of the roof laid in stone somewhat like slates. Individually these are laid at a lower angle than 60 degrees and not quite as steep as I've shown on the drawings.

About 10 years ago I worked for a short time on a Trulli roof in Alberobello in south east Italy, using a limestone that could be cut easily with a hammer and had an abrasive surface. Internally the Trulli roof has a dome rather than corbels. The stone we are likely to use is schist, less abrasive and difficult to shape other than to split—a challenge! The round tower is a team effort of dedicated people and it's thanks to all of them for making it work.



Spiral Steps (Photo: Sean Smyth)

Lime Slam 2015

The annual Lime Slam kick-started the events calendar in the Dublin Civic Trust, where members presented to members. This year the line-up included presentations from the two bursary recipients, Jason Bolton and Eoin Madigan. This started the day off on an international note with experiences from Dion in Greece and the United Kingdom. This international theme was continued when Paul Marlow, stuccodore took the floor giving us a brief but wonderful history of coloured, polished and hand-modelled stucco. Manfredi Anello was on hand to ensure correct pronunciation of all the Italian terminology, not that it was needed! There followed his recent experience in new build brickwork using lime at a Paediatric Outpatients Centre in Drogheda. The west was well represented by Kevin O'Leary, mixing and mastering renders for coping with horizontal rain, as was the north with a great presentation by Daniel McAteer who is continuing on the family tradition alongside his father Jim and watched by his grandfather in the audience, both master plasterers of long standing. Michael Halpenny described recent ruin consolidation work using hot-lime mortars, Ivor McElveen gave an update on the HLM Project and John Savage continued last years discussion on penetrating rain. A difficult line-up to follow but admirably achieved by Pat Hickey showing his medieval mortar mixer in action in the Irish National Heritage Park.

The HLM Project Demonstration Day in Drimnagh by Yvonne Doyle

This, the last event of 2014 for the BLFI, was held on Tuesday 25th November 2014 at Drimnagh Castle. It was a most enjoyable day which comprised a series of practical demonstrations and discussion on the use of hot-lime and earth mortars, including the findings of the Hot Lime Mortar Project. Demonstrations were by Nigel Copsey, Pat McAfee and Andy Bradley on hot-lime and clay mortars with support from Craig Frew & Bill Revie of the HLM Project team. The practical demonstrations concentrated on: hot-lime, hybrid hot-lime, clay, quick-lime and clay mortars. The demonstrations and discussions were aimed at for specifiers, practitioners and also building professionals newly acquainted with lime. Set to be repeated soon on June 4th, book early to avoid disappointment this time !



The Tutors - Pat McAfee, Craig Frew, Robert Howard, Nigel Copsey, Ivor McElveen & William Revie



Materials including hot-lime mortar test cubes and aggregates

The HLM Project Report By The HLM Project Team, Technical & Standards Committee.

The following is a summary of the Hot-Lime Mortar Report which was issued on the 4th May 2015:

Over the past three decades there has been a renewed interest in the revival of hot-lime mortars in Scotland for conservation and restoration. The hot-lime Mortar Project of the Building Limes Forum of Ireland (BLFI) was initiated to re-introduce the use of this technology and bring it into the field of conservation in Ireland by technology transfer.

The Project has been supported by the Office of Public Works and Clogrennane Lime, a subsidiary of Cement Roadstone Holdings (CRH), and funded by Clogrennane Lime and the BLFI, with grants from the Department of Arts, Heritage and the Gaeltacht, and the Heritage Council. Other than the successful transfer technology component, the principal objective of the HLM Project is to develop guidance on the use of hot-lime mortars as in traditional stonemasonry. Its overall aim, however, is to make modern replica mortars available using commercially produced quicklime, avoiding the expense and environmental problems associated with individual kiln burning. It is felt that this will be more practical, have wider appeal for application within built heritage, and be more useful to the 'average mason doing the average job'.

The HLM Project has been divided into two Phases.

The output of **Phase I** has now been successfully completed, the principal findings being:

- Experience in the preparation and use of hot-lime mortars in Scotland does transfer to Ireland and materials available are compatible with slight variation.
- CRH - Clogrennane CaO (Quicklime) complies with EN 459 CL90 and is eminently suitable to the design of mixes and production of mortars.
- Basic formulations with the principles for guidelines in the design, preparation and application of mortars & renders can now be made available.
- Information was gathered for the production of suitable technical literature and for the adoption of best practice, giving guidance on the design, preparation and use of hot-lime mortars and renders, complete with base specifications and methodologies, including aftercare, as well as Health & Safety.

Phase I also involved Demonstration Workshops, the principal one taking place at Drimnagh Castle last November. Contrary to general belief, quicklime (calcium oxide CaO) is not classified as a dangerous material. It is classified as a hazardous material where the risks in-



Medieval Masons

involved in its handling and use can be readily managed. The health and safety requirements, procedures and personal protective equipment are essentially the same as for cement and other forms of lime binders. It is now also available in a granulated (kibbled) form, which is more convenient for measuring quantities and use than the traditional 'lump' or powdered quicklime. The kibbled form of quicklime has already been accepted within agriculture for field spreading and, being relatively dust free, satisfies health and safety considerations. It could be considered less hazardous than other forms of powdered limes.

Not only are hot-lime mortars more authentic than imported mortars, they are relatively inexpensive to produce when compared with other types of lime/sand mortars, due to the low cost of the raw quicklime and the volume increase when slaked, typically double the original volume. In an Irish context, the availability of an indigenous lime binder is an attractive proposition, relative to relying on the import of alternative lime binders from Europe and elsewhere.

However, hot-lime mortars should not be compared directly to the more commonly specified and used Natural Hydraulic Lime (NHL): sand mixes – these can be quite different materials; each has its place within an ever expanding and changing palette of lime mortars which are commercially available. NHLs can be used as a gauging agent when designing hot-lime mortars requiring hydraulic properties.

The prime objective of **Phase II** is to continue to provide advice on formulations and use of hot-lime mortars with further testing and development of varied mixes with different sands and aggregates, including experimentation and testing with pozzolanic materials and other additives. Particular attention will be given to regional sands and aggregates including calcareous materials which are found in abundance in certain parts of the country.



Construction of test walls

It is envisaged that Phase II may be divided into three separate activities:

1. Continuation of Phase I.

Mortar Research and Development, expand range of hot-lime mortar mixes to include:

- Stone types of varying porosity/with sands/aggregates (including calcareous) with NHL gauging/hybrid mortars and their development.
- As above with pozzolanic materials / other additives.
- Brick masonry mortars
- Earth mortars & vernacular mixes

2. Demonstration Workshops.

- Develop and deliver Demonstration & Training Workshops for both building professionals (specifiers) and masons (practitioners) to enhance their knowledge and understanding of the use and application of hot-lime mortars and renders based on the successful Drimnagh Castle model.

3. Research & Development.

- Facilitate the possible establishment of a post-graduate research project into hot-lime mortars and renders.

It is anticipated that the information gained would be collated and disseminated by the BLFI to the wider community through a series of publications, seminars and workshops, tailored, where appropriate, to meet specific requirements.

The Building Limes Forum (UK) has established a special committee on Hot-Lime Mortars and is expected to approach Historic England and Historic Scotland, both of whom have informally expressed an interest in the HLM Project. It is also likely that CADW of Wales and the Northern Ireland Environmental Agency (NIEA) will be approached. This could lead to a coordinated programme, avoiding duplication, and to sharing of procedures, findings and results. Lastly, we must acknowledge all the assistance and dedication of the many volunteers, who gave so much of their time to furthering the HLM Project, with sincere thanks.

Discussion and feedback will always be welcome.



Hot-lime mortar test cubes

Farnaught Lime Kiln Repair, Co. Leitrim By Dr. Jason Bolton (Bursary Recipient)

There have been quite a few lime kiln restoration projects in recent years and this kiln in Leitrim is one of the more unusual examples. Farnaught Lime Kiln is one of the most ornate and well-designed lime kilns in Ireland. In a period when most lime kilns consisted of an open-topped chamber built into the side of a hill, Farnaught was intended as an architectural feature of a model estate demesne by concealing the kiln within a well-built T-shaped house.

Lime kilns were one of the commonest structures found in the Irish countryside from the medieval period to the mid-twentieth century and many ruined examples survive around the country. Most lime kilns were relatively simple masonry structures dug into rising ground with a charging hole above to load stone and fuel, and a draw-hole below to extract quicklime. Farnaught Lime Kiln is exceptional, concealing a brick-lined continuous draw kiln within a well-built stone house. The building formed part of the model Lough Rynn estate of William Sydney Clements, the 3rd Earl of Leitrim, one of the most notorious landlords of the nineteenth century. The meticulous records left by the Earl note that the limestone for burning was taken from his own quarry, noting also the costs incurred for carting, lime-burning and the turf used for firing.

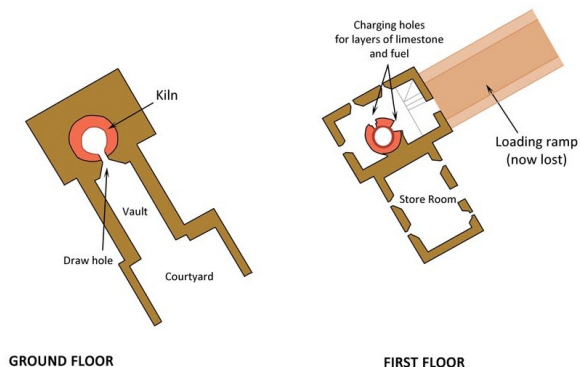
The building presents its best face towards the road, showing ashlar masonry and a segmental arch formed with stone voussoirs rising to a slated roof and topped by a circular brick chimney. In contrast, the sides of the building were more crudely formed, fashioned from dressed rubble masonry and simple clamp-fired brick openings. The building contains only three rooms – a covered loading area at the back where fuel and limestone were loaded into the kiln, a vault at ground level where quicklime was extracted, and a warm but unfur-



nished room above providing basic shelter for the lime-burners and customers collecting lime during the long days and nights of firing.

To produce the quicklime, limestone was brought up a now-lost ramp from the east to a doorway into the rear part of the building where alternating layers of limestone and fuel were 'charged' in the kiln. A fire was lit at the base of the kiln within the barrel-vaulted room, and the charge left to burn until the stone changed into lime. The quicklime was extracted from the draw-hole and loaded onto carts for use as fertilizer and also for building. Lime-burning was considered an 'unwholesome' job, requiring hard labour to load and unload the furnace for 1-3 days, enveloped in noxious and potentially fatal fumes with lime dust burning exposed skin. However, the lime produced helped to transform the surrounding landscape, turning stony pasture and boggy ground into fertile fields for tillage, pasture, tree plantations and pheasantries as well as producing building mortars, renders and plasters for the construction and decoration of buildings throughout the Lough Rynn estate.

This project was undertaken on behalf of Leitrim County Council as part of the Border Uplands Project 2014-2015. The kiln lies 3 km south of Lough Rynn Castle, Mohill and was opened to the public in April 2015. Dr. J. Bolton compiled the historical information for interpretation, lecture & tour. www.leitrimcoco.ie/eng/Services_A-Z/Planning_and_Building_Control/part8/Farnaught/



The Northern 'Wig' - An Architect's Account of Specialist Tuck Pointing on a Prestigious Building.

By Peter Robinson

We were undertaking a detailed masonry survey during mid December 2013. The temperature had dropped to 14 below Celsius and when the Bursar of The Royal Belfast Academical Institution saw my colleague and I heavily wrapped up in thermals, he realised that Conservation Architecture was not a 'behind-the-desk' operation. We spent a total of three days on access equipment, inspecting every brick and block of stone in preparation for the second phase of restoration work to one of Belfast's most prestigious buildings. I had always felt that one of the most interesting parts of being a Conservation Architect is that during detailed surveys, historic buildings can often throw surprises your way, some of which are totally unexpected and in this case, for me at least, completely unheard of before. The RBAI was built between 1810 and 1814 to the designs of Sir John Soane. It is widely accepted that the Grade A listed

building is Soane's only surviving building in Ireland. Located in the heart of the city's cultural and historic core, this landmark building is representative of a much depleted Georgian Belfast.

Since 2011 Alastair Coey Architects have been appointed to undertake a programme of repairs to coincide with the school's bicentennial anniversary. The ongoing works to date have been well received, gaining recognition from the Irish Georgian Society and Royal Institute of Chartered Surveyors.

Prior to our involvement, the building had undergone continuous piecemeal repairs, particularly throughout the latter part of the twentieth century. Many of the bricks had spalled, fractured or been replaced with modern brick and much of the stonework had badly decayed as a result of painting and corroded fixings. All the repair works had been carried out to the highest standard, but one small element of the restoration gained a lot of interest as the project was nearing the end of the second phase of works.

It was during the December survey that, within a sea of cement based mortar pointing, my colleague picked out what appeared to be a vestige of original tuck pointing.



On closer inspection we realised that it wasn't the 'English' tuck pointing that we were familiar with, but indeed something that neither of us had encountered before. Irish tuck pointing or 'Wigging' as it is better known, is a form of pointing that is mostly associated with Georgian Dublin and after much research, we realised that this example of the rare historic pointing technique was given its northern location.

Like many of today's building, there were financial restrictions to what could be built in 1810. Soane's earlier designs showed a much more elaborate neo-classical design with colonnaded quadrangles. The present day three-storey building has a more austere façade of classical simplicity and proportion, comprising clamp fired brick with sandstone pilasters and parapet. The wigging would have rationalised the variety in tone and texture of the brick to give it a regular 'gauged' appearance, however this illusion had long gone. As part of the masonry repair and replacement it had always been our intention to rake out the cement based pointing and replace with lime mortar, however the presence of wigging gave us the opportunity to undertake something unique. 200 years on, and financial limitations are no different, and while it would have been ideal to repoint the entire building with Irish Tuck pointing, a more realistic outcome was to demonstrate wigging to a smaller portion of the building. The School have always been very supportive clients throughout the project and appreciate the importance of retaining the building's historic integrity and authenticity. They had previously agreed to the extra spend on wrought iron gates and hand-made bricks, however, it was the end result of the Wigging that satis-



Wigging joint by the Nolan's Group, Dublin

fied them the most. The area adjacent to the Board room, framed by brick piers and the first floor string course, was selected for its visibility. It is also adjacent to the wrought iron gates, specially made by Bushy Park Irons Works, Dublin, which along with the wigging demonstrate the work of some of Ireland's best skilled craftsmen. The process of wigging is almost a reversal of the tradition English Tuck. The Irish Tuck differing by forming the ribbon first from the white stopping mortar, then applying the coloured mortar after. The work was carried out on site by Dublin based Nolan's Group, specialists in stone and brick restoration, and was completed in April 2015. By that stage, the word of wigging had spread, generating a wave of interest and enthusiasm from the School and further afield. During the 4 weeks on site, it also provided the ideal opportunity for interested parties, including the RSUA Conservation Committee to see the work first hand and the skills involved, and to appreciate the time taken over this delicate technique.

The decision to wig part of the south gable was a complete success. The work looks great; sharp and clean the way it had been intended to look 200 years ago, and the School are very proud to have committed to it. My colleagues and I certainly came away from this project knowing a lot more about wigging, but more significant is the physical traditional building technique, now on display at the School, that can be appreciated and understood by the building users of and visitors to the building for many generations to come.

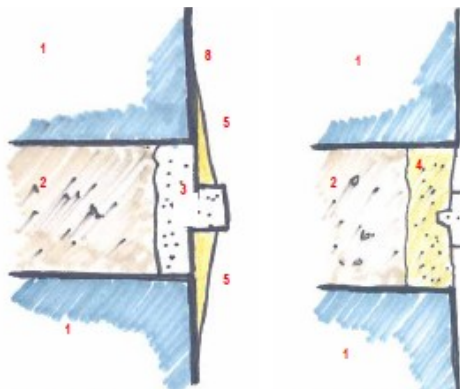


Figure 4.1: Wigging Pointing:

1. Brick
2. Bedding mortar
3. Stopping Mortar
4. Coloured stopping mortar

Figure 4.2: Tuck Pointing:

5. Stopping mortar
6. Wigging mortar
7. Tuck Ribbon
8. Colour wash

Diagram from 'Wig/Tuck A Research Project on Historic Pointing Techniques and Facades Finishes in Dublin' by Shaffrey Associates Architects, Dr. Gerard Lynch & Dr. John Montague commissioned by Dublin City Council, 2010

The Repair of the Crimean Monument in Co. Wexford **By Yvonne Doyle**

A replica round tower sits on an outcrop on the southern banks of the Slaney estuary, two miles from Wexford town, overlooking the N21, the main Wexford/Dublin road. In its prominent and attractive position it has long been a dominant key feature of the landscape and architectural heritage of Wexford. It was built to commemorate the Wexford men who fell in the Crimean War.

The Crimean War (October 1853 – February 1856) which claimed over 600,000 lives has often been considered to be something of a global war, although not officially established as a World War and is considered one of the first 'modern' wars because it saw the first use of major technologies, such as railways and telegraphs. The countries in this conflict were an alliance of Britain, France, the Ottoman Empire (Turkey) and Sardinia-Piedmont against Russia; however, many neutral parties were involved in this war including the USA, the Austrian Empire and Spain. At this time, Ireland was still part of the British Empire and Irish soldiers made up around 30% of the British army in 1854. Irishmen also served in other armies and of the vast numbers of Irish fighting in the Crimean War, around 7,000 lost their lives.

It became a war notorious for logistical, medical and tactical failure on both sides. The most significant events of the war include: the inconclusive and infamous Charge of the Light Brigade during the Battle of Balaklava, the Russians defeat at the battles of the Alma River and at Inkerman. It is also famous for the work of Florence Nightingale who pioneered modern medical practices. The war was one of the first to be documented extensively in written reports and photographs.

At the conclusion of the war, the Irish involvement was celebrated by means of the Great Crimean Banquet which took place in Dublin 1856. The extravagant event was attended by 3,000 veterans, with a further 1000 paying guests and 30 Irishmen received the Victoria Cross for individual acts of bravery during the war. Monuments were soon erected across the country dedicated to the Irish soldiers of the Crimean War. The Monument at Ferrycarrig, in the form of a round tower, was built from October 1857 to July 1858. It is certainly the largest and most impressive dedication in the country. The County Surveyor, a Mr Farrell, and local Architect Edwin Thomas Willis designed and supervised the construction of the tower which was principally funded by subscriptions from the people of Wexford. About £300 was raised. The stone used to build the tower is under-



stood to have come from the Norman Fitz-Stephen castle which had previously stood at the site. It comprises random rubble (shale matching surrounding bedrock) and local red sandstone (or conglomerate).

Construction commenced on the 8th October 1857 and 150 years later repairs were carried out. During the intervening period the tower had endured severe weathering from its elevated and exposed location. This became very evident in early 2014 when the conical roof cap in particular began to show signs of serious damage and started to shed masonry. The situation was further aggravated from damage caused by the notorious Storm Darwin of 12th February 2014. As the tower had not been fitted with a lightning conductor, there was evidence of lightning damage which contributed to a series of vertical fissures around its base.



Following a grant offer from the Department of Arts, Heritage and the Gaeltacht under The Conservation Works to Heritage Buildings in State Care Grant Scheme 2014, repairs to the tower were undertaken by Ivor McElveen Associates on behalf of Wexford County Council.

The scope of work comprised:

- Consolidation and replacement of missing stone on conical roof cap;
- Repair and consolidation of all cracks around base of tower by masonry filling, grouting, stitching where necessary, and re-pointing;
- Pocket masonry repairs and re-pointing of main structure as necessary, being approximately 50% of circumference surface;
- Design and installation of a lightning conductor;
- Erection of a new door commissioned from salvaged oak with handmade fixings;
- Insertion of metal guards at winding openings;
- Placement of a lead skull cap on apex of roof cap to prevent severe weathering;
- Application of a shelter-coat to the base of the tower to protect markings and existing render.

Once all the relevant permissions were in place and before any repairs commenced, a full laser scan and video record by drone of the exterior of the tower was performed and mortar samples were taken and analysed. Stafford Mc Loughlin Archaeology were retained as archaeologist to advise and supervise all works.

Two samples were extracted for analysis

Sample 1 – Rubble Masonry Mortar (Pointing Mortar)

Sample 2 – Bedding Mortar to Capping Stones

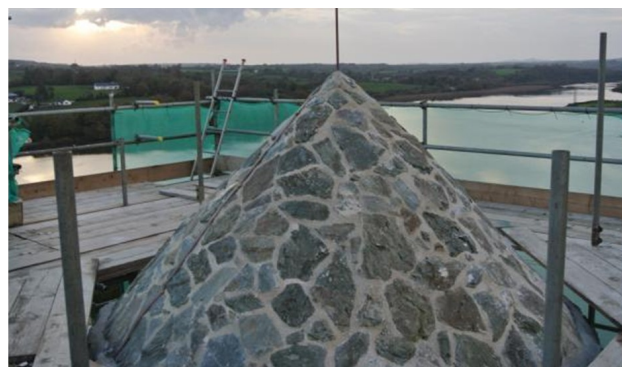
Results of testing showed that both mortar samples were made from a natural sand and a non-hydraulic lime binder. The binder was used either in the form of an un-screened lime putty or a well slaked quicklime, slaked with the sand, at a ratio in the region of 1 part quicklime to 1¼ to 1½ parts sand by volume.

From the results of the XRD analysis and the observations from the microscopic examination, it was concluded that quicklime in the form of a hot-lime was used throughout. This was considered probable as, although there were no un-hydrated or partially hydrated quicklime fragments observed in the sample examined, the presence of sub-angular fragments of partially burnt lime and the abundance of inclusions apparent in both samples to favour the interpretation that a hot mix quicklime had been used as the binder. The sand used in the mortar is dominated by quartz, with quartzite, feldspar and other lithic fragments, including granitic rock types, with shale and coal along with a minor proportion of mica. As rein-



statement of a lime mortar to match the original materials could give rise to a number of issues careful consideration was required prior to selection of a specification based on a non-hydraulic lime. Whilst the analysis provided detailed information about the type of materials used for the original mortar, to replicate this directly would require extended periods of protection. The work would also be limited to April to October and be dependent on prevailing weather conditions. Consequently in order to match the original mortar as closely as possible, a non hydraulic hot-lime mortar was recommended.

However, given the time of year and the probable limitations on extended protection, consideration was given to the use of a gauged hot-lime, where a proportion of a Natural Hydraulic lime be added to introduce a hydraulic property to the mortar. This gave the advantage of providing an early set with an early gain in strength whilst maintaining the porosity and permeability associated with a traditional high calcium lime mortar. Given that the repair works were being undertaken by Patrick Hickey Stone Masonry, an experienced user and advocate of hot-lime mortars, it was decided to use a gauged hot-lime mortar using a high calcium CL90 air lime gauged with NHL. The aggregate chosen was a combination of sands and gravels all sourced locally in an attempt to match the original.





In terms of aesthetics it is an excellent match both in colour and composition and is beginning to blend consistently. The new mortars were well protected and cared for after application which has helped commence carbonation and there are no signs of leaching or disintegration. So, it is through the Crimean War Memorial at Ferrycarrig that the forgotten Irish men of the forgotten war receive the honour and appreciation due to them. The Crimean War is considered to have been as bloody and destitute as the Great War, and so these fallen Wexford men should be recognised as dying heroically in battle. Undoubtedly, the memorial at Ferrycarrig is an important facet of the history and legacy of the Wexford soldier. The recent remedial works will help to protect the monument in a sympathetic manner for continued appreciation for many more years to come.

BLFI Lime Jamboree - Wexford, 28th-30th August 2015, National Heritage Week

The Building Limes Forum Ireland will be holding a Lime Jamboree at the Irish National Heritage Park, Wexford, in celebration of Heritage Week. The actual site for the event will be Pat Hickey's permanently installed Medieval Mortar Mixer, which is in perfect keeping with Ireland's Industrial and Design Heritage being the theme for Heritage Week 2015. The main objective is to introduce and demonstrate the preparation and use of hot-lime mortars and renders, as well as clay mortars, to both the general public, to masons and specifiers alike, and also to others who use building limes in conservation. The Lime Jamboree, which is being held under the patronage of Wexford County Council, will also publicise and promote the role of the Building Lime Forum Ireland. The site of the Mortar Mixer is so configured as to provide for separate public viewing.

Saturday & Sunday (Days 2 & 3) would be dedicated to the public with a Show & Tell including a short, entertaining and informative talk accompanied by demonstrations.



Irish National Heritage Park, Ferrycarrig, Co. Wexford

These would be held on the hour, every hour. The intent is festive in nature, promoting built heritage and the craft of the mason in the use of traditional hot-lime and clay mortars. The Irish National Heritage Park is not only an appropriate and delightful setting for the BLFI Lime Jamboree, it is an ideal venue for all the family with many informative and entertaining exhibits. It also has excellent facilities for children and a cafe restaurant to complement the day out.

For further information see www.inhp.com. Friday (Day 1) is specifically for masons and specifiers (architects, engineers, surveyors and other worthies) with a Workshop Demonstration modelled on the successful BLFI – HLM Project event held at Drimnagh Castle last November. If numbers warrant it, the Workshop Demonstration may be extended to Saturday morning, (Day 2). It is intended to give preference to those who could not attend the November Workshop Demonstration, due to numbers. All wishing to participate are advised to reserve a place early. For enquiries or to book, please email info@blfi.net



Medieval Mortar Mixer in action

BLFI Bursaries 2014-2018

The application must have an educational nature, practical or theoretical, and must relate to the use of lime. For example it could be used to attend a specialist course, either short-term or long-term, be theoretical and/or practical. It could also be used to undertake a specialist internship or a practical experience master class, and so very flexible in remit. The result should lead to better qualification and/or experience and a better understanding in the use of lime in construction. It should be relevant to the applicant's work or future direction.

Bursary

Up to €2,000 will be available per annum for a period of 5 years from 2014. €10,000 will be set aside as a special fund so the bursary will be guaranteed for this period. It is important to demonstrate to the Charities Office that the BLFI have a commitment to relevant specialist education in the broad sense, not just on a year-to-year basis. There will be two bursaries of €1,000 each although the Selection Committee reserves the right in a special case to award one bursary of €2,000. The process will be reviewed by the BLFI Committee after a 3-year period. If applications are not compliant with the terms of the bursary, it may not be awarded in a particular year. In such cases any monies will go back into the fund for future bursaries.

Who can apply?

All members of the BLFI with at least 2 years' membership. In the 5-year period a bursary cannot be awarded more than once to the same person.

What does it cover?

The bursary must be used to cover course fees / internship costs, travel & accommodation.

Timescale for application

Application by 1st March of the relevant year. A decision by the Selection Committee will be made by the 31st March. The Selection Committee will be made up of the full BLFI Committee and 2 externs.

Application Submission

Successful applicants must submit a report, presentation, organise a demonstration or as otherwise agreed upon completion of the proposal for which the bursary is awarded.

Application Form

There is no application form as such. Please make a written application detailing the proposal with a one page CV including contact details. Canvassing the Selection Committee with disqualify any application. info@blfi.net

Education & Training: Waterford I.T.

The BSc in Applied Conservation Skills is a unique 1 year, Level 7 programme which acts as an accelerated module for up-skilling qualified construction trades people and other operatives in building conservation. The general aim of the degree is to enable graduates to understand the principles of conservation and to apply them in a practical manner. Students will learn to manage change in protected structures in a way that retains character and qualities of special interest and demonstrate knowledge in research of historical building development. They will learn to recognise materials, craftsmanship and techniques of previous generations and treat them according to conservation principles and ethics. The course has Springboard funding for eligible students.

http://www.wit.ie/courses/school/engineering/departement_of_architecture/

Recent Publications

Hot-Mixed Lime Mortars, Historic Scotland INFORM guide conservation.historic-scotland.gov.uk/hot-lime-mortars-inform.pdf

SPAB lime briefing www.spab.org.uk/briefing

Paving, The Conservation of Historic Ground Surfaces, Advice Series [www.ahg.gov.ie/en/Publications/HeritagePublications/BuiltHeritagePolicyPublications/Paving - The Conservation of Historic Ground Surfaces \(2015\).pdf](http://www.ahg.gov.ie/en/Publications/HeritagePublications/BuiltHeritagePolicyPublications/Paving-TheConservationofHistoricGroundSurfaces(2015).pdf)

Health & Safety: Eye Protection

The BLFI is now recommending that in the interests of H&S and as a precautionary measure, all masons and plasterers working with any mortars and plasters should carry an individual phial of eye-wash on their person. The eye-wash which we have selected is Diphoterine SIEW, which comes in a small holster for attaching to a belt. (It is the standard issue at all CRH plants). It is manufactured by Prevor, France. www.prevor.com and can be obtained from Innovection, tel: 01642 4211, mob: 087 600 2228, email: info@innovection.net



Newsletter

Building Limes Forum Ireland



Comments and articles in this newsletter do not necessarily reflect the views of the committee or editor.

2015 Calendar of Events

May 21st	BLFI AGM with Guest Speaker: Vincenzo Anello (Conservation in Sicily) Architectural Archive, Merrion Square, Dublin
June 4th	HLM Demonstration & Workshop at Drimnagh Castle, Dublin
June 20th	Walking Tour of Limerick City
July 4th	Lime Kiln Firing & Demonstration at Russborough, Co. Wicklow
August 28th - 29th	Lime Jamboree at the Irish National Heritage Park , Ferrycarrig, Co. Wexford, with Wexford County Council & OPW for National Heritage Week
September 19th - 20th	Traditional Building Skills Exhibition , IGS, Glendalough, Co. Wicklow
September 18th - 20th	BLF Conference at Clare College, Cambridge, UK

Other Events of Interest

Clayfest 2015, Errol, Scotland: 8th-3th June Four days of workshops - rammed earth, cob, traditional turf building, earth plasters, clay and fibres, mud wall conservation, a symposium of turf building, the annual conference and a free information day. **Call for Information:** If any member has information, experience of or a comment on earth mortars (with lime or not) please contact Feile Butler, BLFI member and Co-Director of Earth Building UK. The information is required for a project on the Culture of Earth Building in Ireland. Email: feile@mudandwood.com

Modern Build, Traditional Skills, Tipperary: July 25th & 26th A weekend workshop in Tipperary using hot-lime and earth mortar. A hands-on and discussion based workshop exploring the use of traditional mortars in new builds and repair work. For full details please go to www.caravantasia.ie/events

What is Building Limes Forum Ireland?

The Building Limes Forum encourages expertise and understanding in the use of building limes. It aims to achieve this goal by:

- exchanging, collating and disseminating information, through publication of a regular journal and by holding meetings and conferences;
- encouraging practical research and development through field studies, trials, monitoring and analysis;
- encouraging development of appropriate industrial and craft skills and techniques;
- educating building professionals, builders, conservators, craftsmen and women, and property owners in the appropriate use of lime in building through demonstrations, publications and courses;
- developing contacts with institutions and individuals outside the forum and in other countries that have relevant experience or knowledge.

Communicating With Your Forum

If you would like to respond to any of the topics on this or future newsletters or if you would like to get involved please contact us by post or by email on info@blfi.net

Buildings Limes Forum

The Building Limes Forum was established in the UK in 1992. The Irish regional branch was established in 1999, and formally constituted as the Building Limes Forum Ireland in 2005. It is affiliated with the BLF UK. It is a voluntary organisation with no commercial ties, the majority of members being actively concerned with the repair of historic buildings and some in new build. The Forum acts as an information network, and publishes newsletters and an annual journal of the BLF.

Membership

The BLFI is currently looking for new members. Membership of the Building Limes Forum offers:

- the opportunity to participate in conferences, courses, workshops, demonstrations and visits organised by the Forum;
- an informal network of contacts that is prepared to share information and to discuss matters of general interest to members;
- a means of supporting the stated aims.

An application form for membership of the BLFI can be downloaded on www.buildinglimesforumireland.com