

**Dry Stone
Walling
Association**

North Wales Branch



**Cymdeithas
Walïau
Cerrig Sychion**

Cangen Gogledd Cymru

STONECHAT

No.18



Summer 2009

Cover Photo 'Archers Pavilion' From "Listening o Stone" by Dan Snow (see article by Philip Clark photo © Peter Mauss reproduced with kind permission)

Ed.

Hope you like the edition, we have a continuation of two of the three articles started in the last issue, the question is not so much 'How does a lad from a council house in a suburb of Bristol...' but where did he get to? The occasional general interest countryside 'series' is back with a look at Rhydymwyn Nature Reserve. No book or DVD review as such rather a feature article about American Master Craftsman Dan Snow's work and his books and DVD. Thanks to Dan for permission to use photos from his books. There's a feature article on a project being carried out at Bath University looking at bulging in retaining walls. Interestingly the first wall was built so well that it toppled before it bulged. For those of us who write the occasional report on a wall this quantifiable evidence is invaluable, we can only hope that such investigations continue and they look specifically at other faults and differences between stone types

Meanwhile back copies of Stonechat (from issue 6 on) are now available. £2 each or 3 for £5 (or £1.50 and £4 respectively collected from meetings/events). We have actually sold 2 complete sets. They will be available at the next meeting and forthcoming events. Otherwise contact me. We're still awaiting their on-line appearance on the DSWA site, and at some point they should also appear on the South West England Branch's website www.swedswa.org.uk, Thanks!

Next time something on the walls of Caithness and Churchill Fellowships and hopefully Andy Goldsworthy if I can swing the photos...
Sean

From the Chair

Well, summer is here and the branch has a host of summer activities to suit everyone. We have already held two taster days, with more to be held before the end of the summer season as well as structured training weekends. Don't forget the branch barbeque in July, which should be a great opportunity to catch up with other branch members both new and old. Why not turn up early for a cuppa and build a bit of wall!



We will also be present at other summer events over the next few months including the Snowdonia Society walling competition and a vintage tractor rally in Eryrys. Check out the events diary on the back page and please try to support us where you can. I would also like to take this opportunity to ask that if any members are involved with any events and want to promote dry-stone walling in any

This editions seat is one of several kindly donated by George Gunn, from the far North of Scotland, which will be making their appearance on these pages in due course. © George Gunn

way, please contact us as we can provide display boards, information leaflets and merchandise. It also is of inestimable benefit to the Branch's profile if we can include such events in our diary, especially when it comes to fundraising.

The next branch meeting is on the 1st July with a talk given by Denbighshire's county archaeologist Fiona Gale. Please note the change of venue; it will now be held in the Saracens Head in Cerrigydrudion. Food will be available for those of you wishing to dine; I look forward to seeing you all there.

It might feel like the AGM is a long way away, but with the hectic summer events diary we have planned the summer will soon fly by and it will be time for another yearly round up. At the next AGM our current branch treasurer, Gwen Edwards will be stepping down from her role, so if you or anyone you know would like to take on this responsibility please make sure you come along on the night or if you would like to know more about what's involved please feel free to contact us before.

I would like to end by wishing you all a good summer and thanking the branch committee for the hard work they have put in to organising the branch summer events. Once again please show your support wherever you can and hope to see you all during the summer.

Craig

A Waller's Journey- part 2

Back home in Edinburgh It was Australia calling, a contact in Melbourne through Nathan Perkins who gained his certification from the DSWA way back in the early 90's. This time I don't think we could go any further or we would meet ourselves coming back! 13,500 miles from base and a 9 week project, now with four of my own work team. We built 150 linear meters of 6 meters high dry stone wall. It worked out at 16 tons of Granite per linear metre. Taking 3 men to lift the frames in to place, it sure was amazing. Before we embarked on the down under venture the architects and engineers were reluctant to sign off on the idea until they had a design in front of them. They had never heard of such a structure, Dry Stone what? You mean, no mortar,! no cement?!

I designed the wall myself and provided the plans and for the had to build a sample panel whereby they put a 1 meter square metal plate at the bottom of our structure and apply hydraulic pressure to it, and in addition the same procedure to the top 1 square meter of wall. It was the first time in my experience that I'd ever had to do anything like that. They were truly amazed at the wall's strength and convinced of the design and our abilities, provided us with the necessary paper work (planning permission & permits) so that we could proceed with the project.



Site was prepared by laser level throughout with a frame every 6 yards
© Neil Rippingdale

Completed it's now the highest dry stone structure in Australia.

We asked the owner, why do you need to build it so high? 'well, you see it's like this. We sell race horses for millions of dollars at a time and when people come in to buy our horses and see this massive structure they assume that everything is big'. So in essence it's an architectural statement with a little psychology added. Ten years later and they are still building new structures on the same site with the people that I trained while I was there.

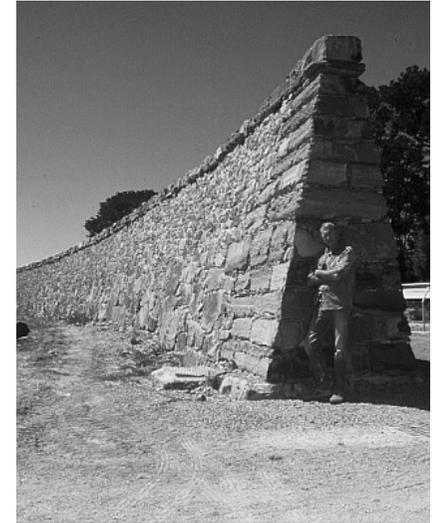
Is that Nova Scotia calling? A phone call passed on to me via Jacqui at DSWA many years ago now, requesting a price to build a wall at the Botanical Gardens in Wolfville just outside Halifax, Nova Scotia from a Landscape Architect company from Bristol, England inquiring as to DSWA Master Craftsmen who had worked overseas.

During my phone call with one of the managers he was looking for someone to spend 4 weeks on a project there. He mentioned that he had also contacted Dave Goulder and that he was going to get a price from Dave as well. I suggested that rather than take one man for 4 weeks, how about 2 men for 2 weeks. It would be easier two men - who had worked successfully together before. I know personally that I would rather work beside a colleague than work on my own if I had the chance. Common sense applied, the deal was done, and Dave and I were off across the big pond on yet another adventure.

Little did we know how much modern day technology would impinge on this project. With the aid of Digital Camera's and the sending of e-mails back to Bristol, the big chiefs back in Bristol made changes by the hour. Dave and I had 36 meters to construct and in the 36 meters there were 36 changes over a two week period. The five hour time difference seemed like an eternity sometimes, wondering if our work would be allowed to stay in place or not. Fortunately in the two weeks we received the changes before work was done, except on one occasion when we had to take a few coping stones off to replace them with turf /sod. We got the impression it was 'let's design it as we go' type of thing. It sure is nice when a customer or client has a plan that you can stick to, I don't mind changes but not after the work is done. Long days and very hot weather for so far north, the job was done and we were heading for home.

No sooner home in Edinburgh and it's a phone call from Nick Aitken. Nick and I had worked together on several projects in the central belt of Scotland on various projects that most wallers would have turned down, all good experience in the big picture of things. Nick called said, 'Neil I have an inquiry from a Mr Campbell in Seattle USA, we need to get this one'. A few days later Nick called in to see me with the plans and the pictures. I don't think I have ever seen such a thorough set of pictures, details, measurements and angles etc. Mr. Campbell was a man who knew what he wanted!

There were pictures of the stone that he wanted to use, all the different angles even one from the roof of his house. When Nick and I sat down to discuss money, Nick wanted it so badly that he was trimming costs here and there, and almost doing the job for fun and the experience. Faxes to and from Seattle and the deal was done.



6ft 3in, David Long - who was very instrumental in getting our team there - is dwarfed by the 20 ft Wallhead. Now that's what I call a Wallhead !!
© Neil Rippingdale

Nick & I left Scotland the day after Valentines day 2001. Mr Campbell was met us at the Airport in Seattle, a giant of a man, with a heart and personality to match. Thirty minutes later we were sitting in his house meeting his family, with the snow starting to flake and flutter outside on the patio. I interrupted Nick and Mr Campbell talking business to mention that the snow was coming down fairly hard; do you not think we should go and cover the site for tomorrow? Naw, was the reply, it doesn't snow out here in Seattle, O.K if you're sure but I tell you it's coming down out there... Well as sure as a cat's a hairy beast, next morning we awoke to 9 inches of snow. Mild as it was and deep with snow I said well, lets have breakfast and then get on with shovelling snow. Mr Campbell set off in his Land Rover to get a turf cutting machine whilst Nick and I shovelled snow off the wall line. You can imagine the looks Mr.Campbell got at the rental company when he came in with 9 inches of snow on the ground and asked for a turf cutter? Back at base, Nick and I were ready for the machine, having prepared 200 linear feet and a little extra at the sides to give us some work space. Within 2 hours the turf was cut and the machine was returned back to the rental place. I think he got it for nothing given the extraordinary circumstances! We all had a good laugh about it.

Within walking distance of the site and with a garage full of Guinness, hot tub on the deck, - we were treated like royalty. We worked good long days and enjoyed some T shirt weather later in the project. One lovely Wednesday morning, blue sky, not a sound to be heard and all off a sudden, a rumbling noise, almost like thunder in the distance, but it couldn't be, it was such a nice day, the horses in the paddock were dashing about, birds were flying all over the place, then the water in the pond started to wave about and the over head electric cables started to sway, holy-moley it was a 6.8 earth quake, Nick was at one side of the wall and I was on the other, the ground between us undulated like being on a roller coaster, we could actually see the ground we were standing on move, an incredible experience. It lasted approximately 45 seconds. We found out later that the city of Seattle had \$ 2 Billion worth of damage and yet our dry stone wall had the flexibility and integrity to withstand that magnitude of earth quake. We were the lucky ones being out side when all this commotion was going,



Basalt straight from a quarry 4 to 8 inch stone with what they call One man rock for caps. Traditional in that area.

© Neil Rippingale

for the people inside any form of building the experience is phenomenal. In addition to all the this, we found out days later that there was a major gas line 6 feet below us. Phew !!!

During our time on this project, it was quite amazing how the interest in walling can make good neighbours. The people in the property across from us had never ever communicated with our client, so from this particular project, neighbours became friends and in to the bargain Nick & I made some life time friends as well, I guess you could say we were laying good foundations for the future!!



Seattle completed

© Neil Rippingale

It sure is funny how some small things can lead to bigger and better things for our future, as from this project I was heading homewards but was asked by Jane Wooley from the Dry Stone Conservancy based in Lexington Kentucky if I could call in to Washington D.C. on a 3 day stop over to help with a Consultancy in collaboration with the National Park Service. Little did I know then that this particular project would take two years to organize before I personally ever had the chance to work on it. Now in my 8th year with the Dry Stone Conservancy as their Training Program Manager I have worked in more than 25 different States through the length and breadth of America which is the starting point for another major story for another time.



Washington D.C. A 16 week project on a 16 feet high wall on 5 various sites covered by Neil in "Stonechat 14"

© Neil Rippingale

Rhydymwyn Valley Nature Reserve: Flintshire's best kept secret?



Tucked in the Alyn Valley in the quiet village of Rhydymwyn, lies the Rhydymwyn Valley Nature Reserve. The reserve opened in 2003, and is home to a wealth of wildlife. Walking the tranquil woodland trail, or sitting in the bird hide overlooking a thriving wetland, it is easy to overlook the site's industrial past.



At this time of year, 'lolo's Glade' is a mass of Ramsons, Dod's Mercury, and other spring flowers

A government-owned site that was for years so secret that it was not shown on maps of the area, the reserve – then known as the Valley Works – was acquired by the Ministry of Supply in 1938 in order that a purpose built overground and underground plant for the production and storage of chemical weapons could be constructed. By April 1945, the Valley Works had been responsible for producing 15,477 tins of mustard gas, and 4.7 million chemical munitions. The site was also chosen as the base for the innocuously-named 'Tube Alloys' project, which in fact involved top scientists such as Klaus Fuchs in research toward the enrichment of uranium for the first atomic bomb.

The landscape of the valley made it suitable for the construction of such as busy and yet sensitive facility. The rural location was nonetheless served by good transport links – a branch of the Chester-Denbigh Railway – for the movement of people and supplies, and the high sides and flat plain of the Alyn Valley at Rhydymwyn helped to obscure the 35 hectare site from the air. As a result, it was the only wartime installation never located by German intelligence. The local geology and mining history

of the area – limestone rich in lead and other mineral-bearing veins – also played a part: there was an experienced work force of mine engineers and miners available to create the three major storage tunnels dug into the site's west bank.

Therefore the landscape of the reserve has long been shaped by the interaction of human activity and environmental changes. Nature has, since the 'Valley Works' became derelict, gone a long way to reclaiming the site. Historic hedgerows have provided the framework of an expanding woodland rich in birds and mammals. Bats, including the rare Lesser Horseshoe, have colonised the empty buildings. Otters have returned to the Alyn and regularly use an artificial holt created by volunteers. Reptiles thrive in rough grassland and bask on cracked concrete roadways.

DEFRA, the current owners, employ NEWWildlife to give nature a helping hand, and we now manage the site for the benefit of wildlife and people. It's a varied job, and all of our team have become fascinated by this unique site. The site is open for managed access, so visitors need to book if they would like to look around, or join one of our many organised events, but if they decide they would like to return regularly, they can join the organisation, be inducted (a simple process), and enjoy unaccompanied access during opening hours. You can keep up to date with our activities at www.newwildlife.org.uk.

One day might find us pond dipping or minibeast hunting with a class of excited school children. The next, we might be cutting and raking a wildflower meadow. We are lucky to have a body of keen volunteers, who have assisted with tasks such as pond clearance, path creation, wildlife monitoring, creating artificial sand martin nest sites, and habitat improvements for reptiles.



With the help of Richard Jones [yes our very own vice-chair – ed.], we have recently been creating a 'reptile bank': a drystone wall, backfilled with logs, brash and stones, and covered in carpet coated in sand and wildflower seeds. This project has enabled volunteers to learn the basics of walling, and will also, we hope, provide basking habitat for reptiles and butterflies, including the Grayling and Dingy Skipper, rare species found on the reserve. Such walls also provide cover for species such as the bank vole, as well as hole-nesting insects such as bees, and predators such as stoat and weasel, both of which have been seen on the site.

Volunteers help to create a stone-faced reptile bank using local limestone and (very) local logs!

We have also been experimenting with habitat creation for other species, including sand martins. These constructions may look unusual, but

they follow a design used successfully on the River Erme in Devon. We have been lucky enough to see sand martins foraging over the wetland throughout the last two summers, and I would be over the moon if this year they decided to make Rhydymwyn their home after their trek across the Sahara!

The wetland was constructed in November 2005 in the footprint of a factory building demolished during the extensive remediation works required to make the site safe for visitors and the local community. The mound was hollowed out and clay-capped, while water which had been causing flooding problems in the tunnels was piped out to feed the water body. The pond has developed remarkably rapidly, and in 2007 we discovered that it was the only known breeding site in Wales for the Red Veined Darter Dragonfly! Wetlands are very rich habitats, and species such as the

Daubenton's Bat take advantage of this, swooping low over the water to feed. We hope they will also take to these Lakeside residences created by our resident bat expert, Karl Martin.

We are constantly working to improve the site for biodiversity, and also to understand the diverse communities of species we have here. Ironically, it is thanks to the 'toxic' legacy of mustard gas that the site has escaped the ravages of development or intensive agriculture. I for one am very pleased that this hidden gem has survived and has not been transformed into a plain wheat field or yet another a business park, but instead is a quiet space that the community can enjoy and that provides a haven for threatened wildlife. If you visit us this summer, you may even see one of the Highland Cows which we hope to use to graze the grassland in the dramatically-named 'Danger Area'!
If you would like to pay us a visit, why not book onto one of our upcoming events, by calling 01352 742238 or 01352 742115?



Above: These artificial nests are made out of fruit juice barrels filled with a sandy cement mix, and camouflaged using sand and good old PVA glue!

Right: These 5 star bat hotels have been nicknamed The Savoy and The Hilton!



Kylie Jones

Tuesday and Wednesday	30th June and 1st July, 10am start	Rhydymwyn	Volunteer event - Himalayan Balsam Bashing at Rhydymwyn and further down the Alyn River. Buffet lunch provided	Kylie Jones	Wellies and waterproofs	FREE BOOKING ESSENTIAL
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Tuesday	7th July	Rhydymwyn	Volunteer Event – Bracken bashing	Kylie Jones	Strong boots, long trousers	FREE BOOKING ESSENTIAL
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Saturday	11th July	Rhydymwyn	Ponds for Wildlife Course: A introduction to aquatic gardening for wildlife, get advice from the experts and meet some pond wildlife.	Kylie Jones and Sue Tatman, Cheshire Wildlife Trust	Welles or walking boots, waterproofs if wet weather	FREE BOOKING ESSENTIAL
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ROGUES GALLERY



Photo © Sean Adcock

Hearing's role is to minimise movement during settlement through holding wedges in place and physically preventing building stones from moving.

This wall is a former competition wall in the midst of dismantling. Whilst some of the hearing has fallen from above it should be clear that there is rather a lot of small rounded stone.

Hearing should be angular. Rounded stone might be easy to bucket from a stream to a wall but it doesn't bind and acts like ball bearings within the wall accentuating rather than minimising movement during settlement.

Any gap should be filled with as large a piece of hearing as possible. This is never going to be one perfectly shaped piece, so smaller gaps then get filled with smaller stone.

It is never poured from a bucket (other than to provide a supply for hearing alongside an already filled piece).

Many of the Snowdonia Society competitions have been new walls, it has amazed me how often competitors have bucketed rounded and undersize hearing into the wall. My observations suggest that the 'malpractice' is prevalent amongst Amateurs and Novices but not exclusively so. A couple of years ago I was rebuilding a section adjacent to the winning professional stint, a large section of which collapsed when I knocked a (particularly large) traced stone, the middle being mostly rounded river pebbles.

Judges and competitors (and everyone else) please note in walling terms this is criminal.

Sean Adcock

DAN SNOW

VERMONT MASTER CRAFTSMAN & STONE ARTIST

“We are having wretched weather and I am writing about a stone wall. I understand that all dry stone walling people, at one time or another, write about a stone wall. It’s because it’s easier than walling.” You can quote me on that.’ That’s how Dan Snow ends his new, beautiful, poetical, practical book about his work, *Listening to Stone*. He’s adapting the words of a Maine writer who was having splendid weather and was building a stone wall, like all literary people at one time or another, because it was easier than writing. Look at the email address of our current DSWA national chairman if you want a hint that *wordsandwalls* go naturally together. As I write I’m looking out at a line of garden walls I built fifteen or twenty years ago, and thinking how similar the task was to what I do in the back bedroom on the laptop. Dan knows this both instinctively and intellectually, that you choose the right stone for its purpose as you choose the right word, that you place it so that it fulfils its function with the maximum efficiency, that you don’t think of what you know is shoddy work that it will somehow become better if you leave it and go away, come back and just carry on.



Firepit. From “Listening to Stone” p3.
© Peter Mauss

One obvious way in which Dan differs from most of us is in the sort of clients he has: not farmers wanting something stockproof, or local authorities wanting “instant heritage”, but in the main owners of rather special estates or gardens. Our gardener clients want no-nonsense, functional walls to front a raised bed, keep out the neighbours’ kids, train a rose over. In south eastern Vermont there are many rich, sensitive people who want works of art around their properties. They give Dan a remarkably free hand to create branching walls, walking walls, firepits, corbelled arches. “*Drystone walls are old forms full of new ideas*”, he wrote in his earlier book, *In the Company of Stone*. Dan has ideas as other people have problems; they flow from him like melodies from Tschaikowski, and he is equally competent at giving them form in stone and in words.

Many of his ideas come from the stone at his disposal. Geologically, Vermont has the same rocks as much of the Scottish Highlands which New England once joined, rocks like granites, quartzites and mica schists. Some north-west Wales rocks are similar, and could be effectively used in the imaginative structures Dan builds. Much of his stone is “found”, the detritus of granite quarries, or the remains of the extensive field walls which decayed when the early farms were abandoned and the woods came back. But his ideas also come from within him, from the Buddhist concepts he has been

influenced by, from his daily practice of meditation, from his intense awareness of birds and insects around him as he works. Intensely aware both of his own inner self and of the natural world around him, it is no surprise that his unexpected creations seem right and natural.

How easy it would seem to be for such a visionary to be impractical! But as he makes plain again and again in what he writes – and as I’ve had the privilege of seeing when working briefly alongside him – he is as competent in the practicalities of the craft as the most traditional British waller with few thoughts beyond getting the job finished in correct fashion. He can write “I overhear stones in conservation...” but he also can give practical hints on the best way to fasten line to a batter frame, or to use your hammer to break the stone as you want. His analysis of why the pillar he built for his Master Craftsman’s certification began to fail after three years is a piece of self examination not many of us, perhaps, are very willing to do. One aspect of his professionalism is that despite his natural instincts for the simple he has come to use machines where they simplify and speed up a job. He’s no Thoreau at Walden Pond.

Dan has been walling for over 30 years, so already had plenty of experience under his hammer when his first book, *In the Company of Stone*, was published in 2001. This is a large format, “coffee table” paper back book, beautifully designed as so many American books are. It is superbly illustrated with photographs by Peter Mauss which are themselves worth the price of the book (\$22.50, but Amazon as always has cheaper copies available). Some of the photos are in black and white, some in colour; to me the monochrome ones are the more effective in focussing attention on the texture of the stones or of the wood, trees, plants, which accompany the constructions. The text alternates interestingly



Dan at work. Recreating a cleit from St.Kilda where they were used to store bird eggs. From “In the Company of Stone “ p.3
© Peter Mauss

between a very few sentences in large type and two colours facing a photo, and short essays printed in three columns on subjects like “precision”, “diligence”. It could be a rather mannered form for a book, but somehow it suits his subject and his style. At the end is a “gallery” of 50 small photographs with locations, dimensions, descriptions, how long they took to build. A little disappointingly for my own interests, he only writes for “origin of stone” such things as “block-field stone” or “quarry stone, recycled cobblestones and sill stones”, only occasionally giving the geological terms. So much of the impression made by his walls in fact depends on whether it’s granite, schist, or whatever – never the bland regular sedimentary stone so many British wallers have to make do with and which calls forth very regularly coursed walls and very little incentive to the imagination. There are some interesting comments appended, on the incidents of construction, and the odd good little anecdote of the sort of things that happen to all of us on a walling job, such as the irate house guest woken by the sound of machines and rushing out in her nightgown.

Listening to Stone (2008, \$23.95) is also illustrated with beautiful photographs by Peter Mauss, and is a rather more conventional looking octavo hard cover book (a sign of the times, it’s printed in China whereas the first was printed in Italy. US printers presumably have priced themselves out of the market). Again, some pages are given over to a few sentences in large type, and most of the book consists of short essays on various topics. *Gathering* is an interesting account of an important aspect of his mode of work “my yearly stone gathering” – remember, that for much of the winter Vermont is covered in snow, and there is then the “mud season” when building is almost impossible. Dan always

prefers field stone: "calling a quarry and having it delivered is one obvious option. But it's just not the same – the stone or the experience. Going up into the woods assigns a value to the stone that can't be gained by any other means. They are discovered in a state of innocent repose, all supine, snuggled together on the forest floor in peaceful splendour. My wish that they remain undisturbed has never been as strong as the itch I've felt to build something with them." I resonate enormously to this, my own experience in Vermont as, not often enough, in mid Wales. This tranquil first page is followed by a hair-raising account of one expedition with excavator and "Morooka" (a dumper truck) when Dan and his assistant lost control of their vehicles on vertiginous mountain tracks.

Occasionally Dan brings in insights gained on foreign trips, such as one to Val Lumnezia in Switzerland to work with a DSWA contact, Deiter Schnieder, whence he brought back the inspiration



"Swiss" Sheep shed from "Listening to Stone" p64. © Peter Mauss

for a stone roof where the stones "are held on the slope by their own weight and nothing more, just like the stones on the roofs of Vals." Or he goes to the Gallarus Oratory on the Dingle Peninsular in south west Ireland, and writes about it as well as I've ever read. He links the shape and construction of the chapel to the monastic ideal: "For the builders... it may have been their own internal search for balance that inspired them."

Near the beginning of the DVD (*Stone Rising, the work of Dan Snow*, www.fuzzyslippersproductions.com, 57 minutes, \$25 + p&p), there are shots of Dan entering his tall, thin, isolated wooden house above West Dummerston, and looking out over the fields and woods around it. Having spent a few days there in the early 80s, I felt a real surge of thankfulness for having been privileged to visit a place which spoke so strongly of the grave, humorous, wise, competent personality of its owner, and I had a longing to go back. There follow many well filmed shots of Dan creating his works and musing in the attractive style of the books. On the whole, though, I found the video rather less compelling than the books. Partly this was a reaction against the admiring comments of some of his clients who speak along with him; partly that Dan does not speak as fluently as he writes. He is a lovely person to be with, and has much wisdom, but his slow, rather hesitant speech doesn't stand out from the sound track as you are captivated by his techniques and vision growing into form before your eyes. But this is probably just me, not helped because for some reason the film would only play in black and white. While that is wonderful for still photographs, it's not so good for motion intended to be seen in colour. But many folk will enjoy this video because they can rightly not

see enough of a first class waller in action – though Dan is not gregarious when on the job, and prefers to work alone if the task allows it.

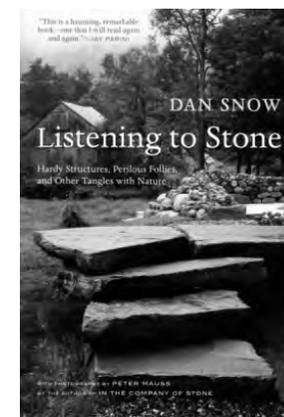
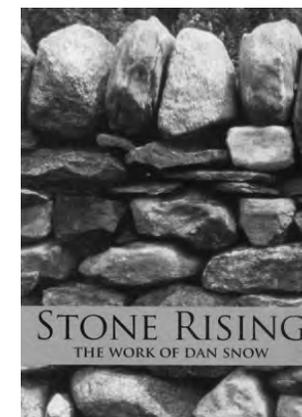
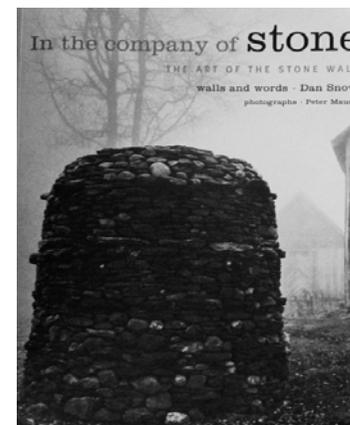
You'll have realised by now that these are not "how to do it" books and DVD, although the attentive reader or viewer will pick up many useful hints and insights along the way. Rather, they are invitations to share the inner as much as the outer life of a man for whom stones are objects of reverence, calling him to fashion them into shapes of beauty, usefulness, interest. But he doesn't compel you to follow his own philosophy of life; so they would be lovely presents to give or to receive. What I think he would expect of you, though, is to accept the very last thought he leaves you with in *Listening to Stone*, after the words with which I began: that none of us know it all from the start, that it's in the grey areas where boundaries are unclear "that life is most fecund and that getting the most life has to offer means moving off the frosty high ground and sloshing through those warm muddy waters. Loss, grief, hope and joy are all there to be encountered in their turn. Dry stone wallers are not excused from bouts of existential mud wrestling just because they choose to tussle with the physical world every day. Those of us who are willing to embrace all that life has to offer, at whatever emotional, spiritual, or physical level we find ourselves, have the best chance of finding ever-new joy along the way."



6' diameter hollow sphere. "In the Company of Stone" p.94 © Peter Mauss

I say amen to that, as someone who for many years was on the frosty high ground of religious ministry and found the black and white certainties I was expected to stand for increasingly uncomfortable. Sloshing around in the warm muddy waters of walling, even when the mud was cold and full of sheep shit, has brought unexpected joys, such as the privilege of knowing people like Dan Snow.

Philip Clark



We've had permission from "Fuzzy Slippers" to have a public showing of "Stone Rising" which will be on Friday 23rd October At Caban, Brynrefail, Caernarfon, in conjunction with the "Occasional Cinema". See 'Branch Round-up' for more details.

Investigation of bulging, bursting and toppling in dry-stone retaining walls

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² School of Civil Engineering & the Environment, University of Southampton

As part of an EPSRC (Engineering & Physical Sciences Research Council) funded project at the University of Bath, a series of full scale dry-stone retaining walls have been constructed and tested to destruction. Each wall was built to a different standard in order to facilitate the investigation of various behavioural aspects associated with dry-stone structures. In particular, the phenomenon of bulging was successfully recreated.

Within this article the development and implementation of the instrumentation used to record the tests is described, as well the testing procedure itself. A full version of this article was presented to the 11th Canadian Masonry Symposium, and as such may be found in the conference proceedings.

INTRODUCTION

There are estimated to be 9000 km of dry-stone retaining structures in the UK lining the road and rail network^[1], mostly dating to the 19th and 20th centuries. Though poorly constructed walls presumably collapsed shortly after their construction, the majority of walls have remained perfectly stable over decades of usually steadily increasing loading and weathering of the stone. However, many walls have deformed or bulged and are regarded as potentially unstable. Because little guidance is currently available to assist engineers in the assessment of these structures^[2], they are often replaced, at great cost. They are very rarely rebuilt in dry-stone, as the dimensions required by current design practice make this substantially more expensive than a concrete replacement. It has been estimated that the total replacement cost for the dry-stone walls lining the UK's highways would be over £10 billion^[3]. Indeed, internationally accepted design practice would deem most existing structures to be inadequate.

There is therefore a clear requirement to have means of assessing existing structures that is realistic. Substantial difficulties exist in obtaining information about individual walls, especially their effective thickness and backfill properties, and there is also considerable uncertainty regarding the appropriateness of current design methods for such structures. Research has been carried out at the Universities of Bath and Southampton to address this. The main focus has been on model and full scale testing linked to advanced numerical modelling. However valuable such computational techniques are for research, they are not suitable for routine work by local engineers around the world, who simply do not have the appropriate expertise and resources. A part of the work at Bath has therefore been to develop a simple computer program, which can be distributed freely and used easily to explore the stability of dry-stone retaining structures.

PREVIOUS WORK

Relevant data regarding dry-stone retaining wall structures is sparse. The largest reported tests to date were conducted in 1834 by Lieutenant-General Sir John Burgoyne, who constructed four full size test walls in Dun Laoghaire, Ireland. Each wall was built using the same overall volume of square cut granite blocks, but arranged in different sections (Fig 1). Testing consisted of backfilling each wall until the full retention height (6 metres) was achieved, unless premature collapse occurred.

From this work Burgoyne proved that wall geometry has a substantial impact on overall stability. However, as the walls described were constructed of carefully shaped and tightly fitted granite blocks, this could have caused different behaviour to that which would be observed in more traditional walls, where the stones may rotate and move more freely. Regardless, his findings and observations remain

the basis for the validation of almost all of the numerical studies carried out to date on dry-stone retaining walls, despite consisting solely of dimensional measurements and visual observations reported 19 years after the tests^[4].

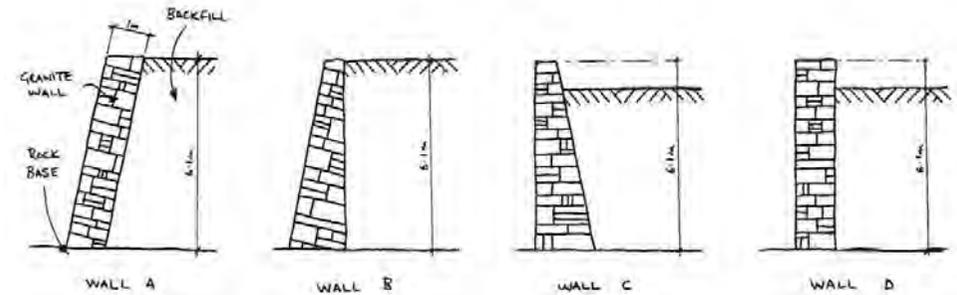


Figure 1: Burgoyne's test wall geometries

Work of such a physical nature was not conducted again until 2005, when a French engineering team led by Jean-Claude Morel and Boris Villemus built and tested five large scale test walls at ENTPE, Lyon^[5]. (Ecole Nationale des Travaux Publics de l'État - National school of Public works) The walls were of various sizes ranging from 2m – 4.25m high, up to 1.8m thick and between 2m and 3m long. Each wall was subjected to hydrostatic forces [essentially water pressure -ed] via a large PVC-lined water filled bag, in order to load the wall using purely horizontal pressures that could be precisely known at all times.

The walls were purpose built as short sections with exposed ends. In this way the cross-sections could be observed during testing, and the internal behaviour of the wall recorded. As the walls were increasingly loaded with water pressure via the PVC bags, the movements of the individual stones were measured, and any planes of internal differential movement determined [That is if one part of the wall moves at a different rate to another creating a fault line - ed] . This data was then used to develop more accurate analysis techniques, accounting for the unmortared nature of these walls and the ability of different sections of wall to move relative to each other.

Despite the advantages of being able to view the internal mechanisms of the wall, this method does have drawbacks. As a consequence of using short lengths, the behaviour will be somewhat different to that of a continuous wall, mainly due to the fact that in a longer wall the adjacent sections will provide support to and influence the loaded section. This might in turn influence the location and amount of movement.

TEST SETUP

Each of the tests described in this paper were carried out consecutively in a unique outdoor test laboratory situated on the University of Bath campus. To avoid the problems associated with using short sections of wall (as described for the tests at ENTPE), each wall was required to have a significant width/height ratio. Wall spans of 12 metres were chosen, having a height of 2.5 metres through the central test area (including a 300mm cope). The central 4 metres of each wall rests upon a mechanically jacked platform, which has the ability to move vertically as well as tilt forwards or backwards. This allows both foundation and backfill settlement to be imitated, with movements being directed from a remote control station at a rate of up to 10mm/min. In addition, a steel frame is erected over the central portion of each wall, from which a 20 tonne capacity hydraulic jack is suspended, allowing an additional load to be applied through a steel plate onto the backfill (fig. 2). The purpose of this load is to replicate the heavy loads (such as lorries) to which existing walls might be subjected.

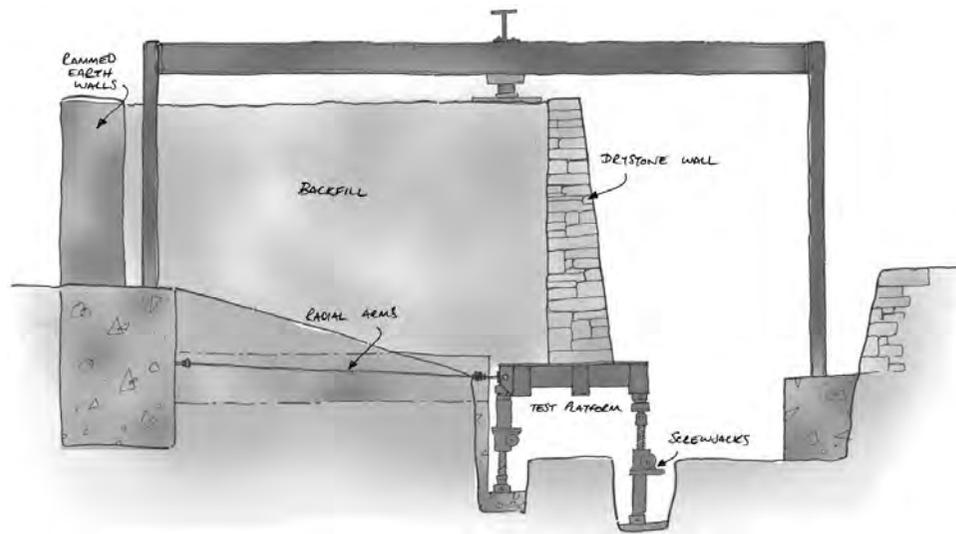


Figure 2: Diagram of test setup

The material used to construct the walls was an undressed Cotswold limestone provided by the Natural Stone Market Ltd., requiring approximately 30 tonnes for each test. Limestone quarried from this region generally comes in two varieties, which can be identified by their colour - either grey or a lighter, creamier colour. The grey limestone is generally considered to be much more durable and so has been used throughout this project.

The retained material for each test is a 14mm single sized aggregate, requiring 100 Tonnes to completely backfill the wall and ensure that any failure planes [the surfaces of a fault line - ed] which develop are not impeded by the wall extending either side of the immediate test area. This particular backfill has been chosen to ensure that the retained material is completely free draining, allowing no build up of water pressures which would cause complications when attempting to analyse wall behaviour, because to some extent the actual pressure distribution would inevitably be unknown. Elevated water pressures are certainly a factor in deformation and failure of dry-stone walls, but this phenomenon is better addressed by mathematical calculation/modelling than by practical testing.

TEST WALLS 1 & 2

The first wall was built in June 2007, constructed over 5 days to a high standard, having tightly packed faces with a well finished appearance (fig. 3a). The overall thickness ranged from 600mm at the base, with a battered front face tapering the wall to 400mm at the coping. Through-stones were incorporated at several levels following standard walling practice.

The backfill was placed in layers of 300mm and compacted using a 1kN vibration-plate compactor. Through plate loading tests, the angle of repose of the backfill material [ie the angle at which the backfill remains stable, at higher angles it begins to cascade- ed] was found to be 50.1° , which is much higher than most in-situ retained fills. The fill was placed until a height of 2.2m was attained – 300mm below the crest of the wall, level with the base of the coping stones.



Figure 3: Test wall 1: a) post construction; b) prior to failure

The wall was then monitored for one month and after it was determined that there had been no settlement or movement, the wall was tested over the course of five days. The first day consisted solely of a 40mm raise of the mechanical platform. This was to ensure that the maximum amount of friction possible was generated between the wall and the backfill. In practice, this is a very difficult parameter to measure, and is dependent on both the relative movement of the wall and backfill and also on the properties of the materials themselves. For in-situ walls, it is common for the backfill to settle over time, whereas the wall itself generally will not. Even a slight relative movement is enough to generate the full amount of friction possible, however as this is a long, ongoing, process it is not suitable for these tests. Instead, the wall is raised, causing the same relative movement found behind in-situ walls, hence ensuring the maximum amount of friction.

Following this initial movement, a combination of surcharging [adding additional loads/overloading – as would be the effect of heavy transport – ed.] and forward rotation of the platform was carried out. A rotation of 3.75° was achieved by lowering the front jacks a total of 75mm, imitating the effects of settlement under the toe [outermost edge – ed]. The surcharging was initially at a distance of 500mm from the back face of the wall, applied via a plate. This was later moved to 1m from the back face as it was found that the initial position was too close to the wall, and only affected its upper portion. To compensate for the additional distance, a larger plate of 500mm x 600mm was used, allowing larger loads to be applied. The loading mimicked heavily loaded vehicles passing over the backfill.

The first wall eventually toppled. Although some slight bulging occurred, the wall generally moved monolithically (as a single mass), rotating about the toe (fig. 4a). The toppling failure was encouraged by both the initial surcharging near to the coping, and also by the rotation of the platform. The monolithic behaviour was due in large to the tight-knit construction, as the meticulous construction process ensured that each block was placed securely, with no rocking or movement possible.

In an attempt to instil flexibility and encourage bulging during testing, the second wall was built with a sectional profile 100mm thinner throughout. In addition, the backfill was placed uncompacted, giving an angle of repose of 41° , which is much closer to that of typical retained fills. The build time was shorter, reflecting a slightly less precise build, with a looser face and poorer internal fit, thus allowing more individual stone movement.

To maintain continuity between each wall, the second test was in general identical to the first test procedure, but the platform rotation was not applied as it was seen to be mainly promoting a toppling failure. The surcharge load was applied after the initial platform raise, however only the larger plate was applied, at a distance of 1m from the back face of the wall.

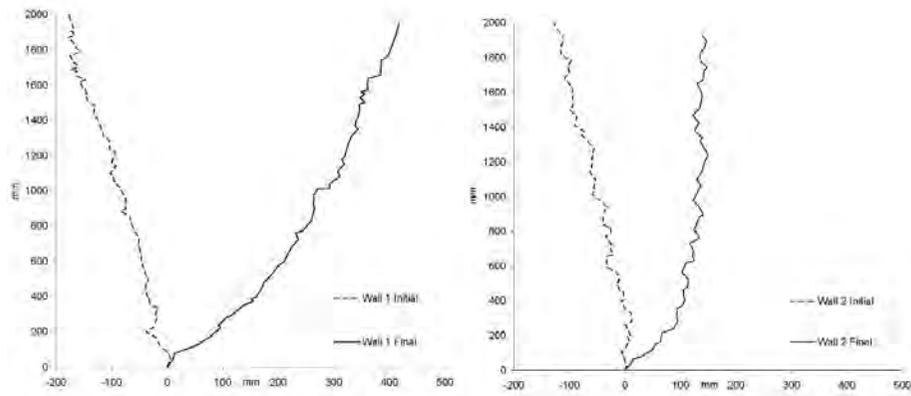


Figure 4: Surveyed movements: a) test wall 1; b) test wall 2

Failure was again via toppling, but prior to collapse the wall profile was far from linear. The lower half of the wall had bulged out, with the upper half retaining its integrity and form above this. From figure 4, the two walls can be compared with the differences being apparent. Although the main failure mechanism was toppling, it should be noted that for this wall there was another factor which instigated failure. As the loading progressed, and the deformations occurred, the bulging in the lower courses caused several blocks to move much further than those directly below. Another consequence of these deformations was to shift the wall's centre of mass further and further forwards. At the time of failure, some of the lower face stones were overhanging those below significantly, with almost the entire weight of the wall passing through them. These loads combined with the overhang were sufficient to force these key stones to rotate and fall out, consequently causing the failure of the entire structure.

VOIDAGE INVESTIGATION

During the course of the investigation, tests were conducted to determine the density of the walls. The density of the stone itself was measured at 26kN/m^3 [about 2.5 tonnes per cubic metre – ed] and by weighing set volumes of wall the overall density could be determined. To ensure the volumes measured were as accurate as possible, small 'test cubes' were constructed, consisting of open-sided timber frames of specific dimensions (generally 600mm x 500mm in plan, 500mm tall). The masons then constructed sections of wall inside the confines of these boxes to a variety of standards (fig 5). In addition to recreating the general standard of the walls used in the tests, examples of high quality and poorer quality walls were constructed.



Figure 5: Sample wall blocks: a) best practice; b) poor construction

It was found from these tests that the lowest percent of voids that a traditional dry-stone wall can have is roughly 20%, although if each block was carefully squared and tightly fitted this value could potentially be lower. Conversely, the poorly constructed block had 40% voids, and even higher values have been reported by Walker et. al.^[6]. From further testing, the walls constructed for tests 1 and 2 were found to have approximately 28% voids.

TEST WALLS 3 & 4

It was determined that the third wall should examine further the effect of block rotation, and the ability of individual stones within the wall to roll and rotate more freely. To investigate this process, the wall was built identical in profile to the first wall (600mm wide at the base, tapering to 400mm). This wide cross-section was intended to provide as much stability as possible against overturning failures [essentially toppling – ed], allowing other mechanisms [forms of failure] to develop. The internal make-up of the wall was much different to the first wall, consisting of a much rougher construction, utilising much smaller unfaced blocks ensuring limited use of slabs. The standard practice of back wedging the stones to eliminate movement was largely disregarded, giving each block the ability to rock slightly in place. In short, the wall more closely resembled a much older construction, subjected to several years of weathering and erosion, with a much higher percent of voids than the first two walls. Indeed, once testing began, a small section of the wall failed, leaving a large hole whilst the rest of the wall remained stable (fig. 6a).



Figure 6: Test wall 3: a) local failure; b) prior to total failure

The testing procedure remained identical, with an initial platform raise followed by a surcharge at a distance of 1m until the collapse mechanism occurred. A stable bulge quickly developed, forming the distinct 'belly bulge' which is commonly found in many in-situ walls (fig. 6b, fig 7a). This bulge continued to develop as the loading progressed, until collapse occurred mainly as a bursting failure.

Masterclass: Random walling (part 2).

More Apparently Random Thoughts...

In case you hadn't noticed, Masterclass when not dealing with incredibly rare requests tends to be about something I have been recently working on. This current 'random' series was sparked off by some such process.

I spent around 6 weeks towards the end of 2008 repairing a ha-ha in Northamptonshire, a random pattern but using fairly regular (i.e. lots of squarish/rectangular) stone. So why not coursed? A question I asked myself on more than one occasion, it would have been so much easier to course it. However, the original wall wasn't coursed, and some of it was to remain and much of it was on a slight slope. Slopes and coursing do not always go together. On slight slopes the coursing can follow the slope, although this is not universally accepted as appropriate (basically the stones necessarily have to break one of the cardinal rules, that stone is set to the true horizontal so that gravity works only downwards- and stones cannot theoretically slide sideways along the line of the wall). If you try to course a wall on a slope what is the top course at one point will necessarily be the footing elsewhere.

This was noted in Stonechat 17, where the idea of jumpers, that is stones which rise up through two (or more) courses was introduced. To this we need to add the idea of the (I think) wonderfully named "snecks", that is "a small stone inserted into a gap between larger stones in a rubble wall" (Shorter OED). Remember that rubble here just means stone which has not been sawn/dressed.

Perhaps unsurprisingly there is a British Standard for Snecked Masonry



Random Snecked wall, Catesby, Northamptonshire © Sean Adcock

This piece of dry face mortar backed retaining wall shows how snecks and jumpers mixed together can create a random wall out of regular stone.

Within random walling in general and especially with (less stylised) more irregular stone then in effect any levelling stone placed to make up height next to a taller stone is a sneck, and any stone taller than one next to it is a jumper.

One final consideration here are "soldiers" that is snecks set on end rather than flat (i.e. standing to attention). Generally within walling these are frowned upon. If they are purely a sneck then they are inherently unstable and likely to move considerably during settlement. That said where they fill an

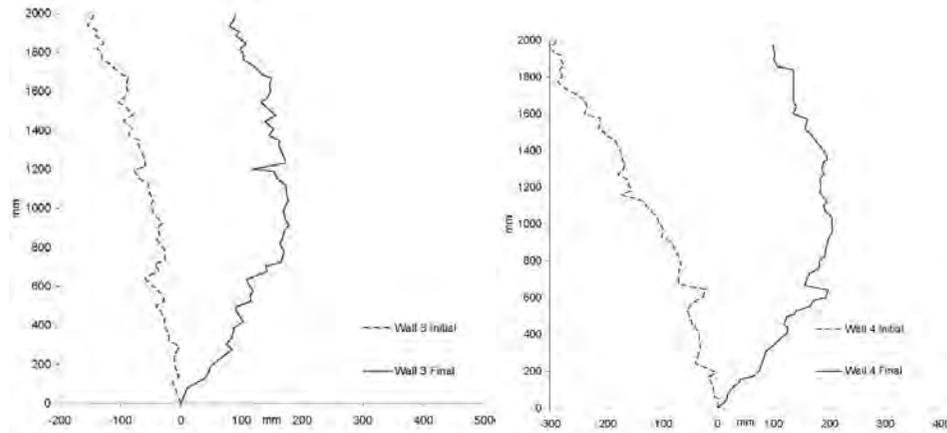


Figure 7: Surveyed movements: a) test wall 3; b) test wall 4

As the third wall displayed the bulging and eventual failure mechanisms described within the project goals, the fourth wall was used as a control, repeating the third test wall. The wall construction technique was the same, utilising similarly sized blocks in the same manner as before. This wall was also tested in an identical manner to the third wall, and as figure 7 shows, the repeatability of this test was demonstrated.

CONCLUSIONS

The main goals of the physical tests described were to recreate and understand the mechanisms which occur in dry-stone structures in the field, in particular the phenomenon of bulging. Through the four wall tests described in this paper, various aspects of dry-stone behaviour have been investigated, culminating with the repeatable recreation of a stable bulge. This has been linked to block rotation, build quality and overall wall geometry.

The eventual goal of the project discussed in this paper is to develop guidelines and codes of practice to use in the field. Although still requiring further testing, particularly in the area of stabilising distressed walls, this work represents a large step forwards, giving an understanding of the forces at work and the important behavioural aspects of dry-stone walls.

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awkward gap between two good largish solid stones and are hammered in there is some merit to their VERY occasional use (e.g. monthly rather than every couple of metres!). In this instance, and also (perhaps more notably) with smaller stones set 'normally' between larger stones they must be 'nipped' by subsequent building stones otherwise they can be relatively easily displaced, compounding the fault of using them in the first place, more of which later.

Jumpers and woolly thinking?

When you look at many walling books and articles (mine most certainly included) the drawings tend to be of stylised, regular stone that here in Wales we can only dream of. This is essentially because this is the easiest way to illustrate a principle. The principle is essentially the same for more random rock shapes, it is then for the reader to see how this principle relates to their own specific rock type.

From the photo right, it should be clear that jumpers are liberally spread along the length, and occasionally through the height of the wall, with some level coursing and a smattering of snecks. In the wall below, built of similar stone the jumpers are similarly spread but do not seem to stand out as much at first glance.

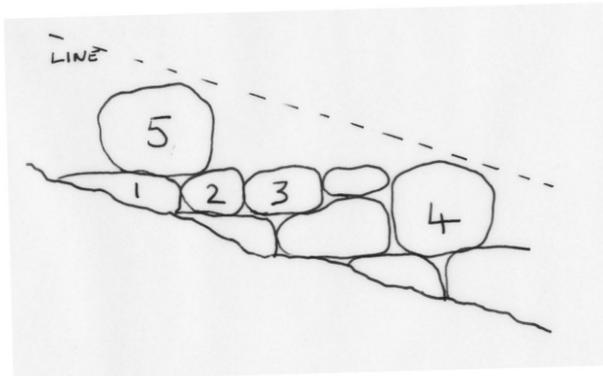


Above wall on slope showing jumpers and levelling.
Left similar construction but on the flat.
Both Blaen y Nant, Nant Ffrancon.
Both © Sean Adcock

The fact that the wall is on a slope helps make the creation of layers or platforms and their interaction with jumpers more noticeable. The regular spreading of jumpers is technically important on a slope where

there can be a tendency to group them (1,2,3 right). This gives rise to the problem noted in part 1 where effectively the levelling stones at one point, if coursed, become the footings further along. In essence you end up with too many small stones low down in the wall and a conscious effort has to be made to spread jumpers of a similar size along the wall at similar heights relative to ground level (3 & 5 right).

Here the line becomes as important for determining your stone distribution along the length as it does for actually



determining line/batter.

In effect working on a slope forces you to consciously work this way, the steeper the slope the more pronounced this becomes. Shallower slopes will conversely make for more coursing as you have less need for jumpers and snecks. Here their presence is less a structural necessity and more just a determinant of the extent to which the wall looks random.

On the flat technically you probably do not need to create such distinct platforms, normally only levelling between a few stones. Basically you have to place adjacent stones to some sort of level to allow for next stone up. This can be a problem as temptation can be to prolong the course.

As seen here this is particularly likely to be the case with more regular stone



Random wall with regular stone, Little Everden, Northamptonshire.

© Sean Adcock

This is akin to using all the big stones in one area noted earlier and care has to be taken to break the coursing to allow for better distribution of stone. It is important to remember that in random walling your line is a guide to batter and if you set it as such horizontal. If you work to the line, which there is a tendency to do with regular stone then you are likely to get overly long platforms/coursing. The exact extent will depend on the precise nature of the actual random pattern, deciding exactly when to end a course is often largely just a question of experience and whether it's right or wrong a highly subjective decision. I suspect that generally there can be a tendency to over run the coursing, so when in doubt step. Just remember the more often you step the more random the pattern. Conversely as we shall see next time some random patterns include complete courses.

One final consideration, again particularly with more regular stone is not to put a jumper in and then just continue same lower layer depth that led up to it on the other side of it.

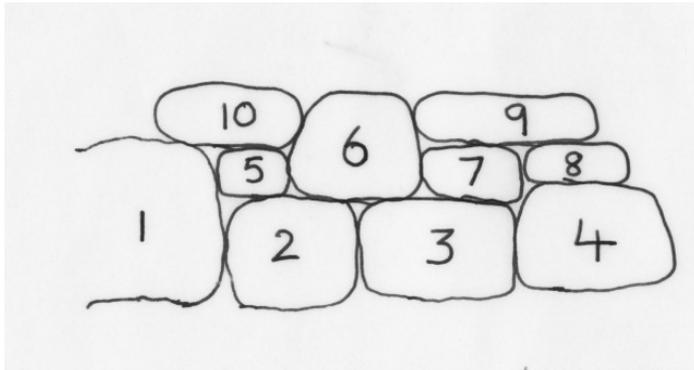
Where does this leave us with a method for random walling?

Broken down to its absolute basics, random walling is just about employing snecks and jumpers with a bit of coursing; although it may well be that the coursing is in effect just levelling two adjacent stones, and no more.

How you put these together creates the pattern – from very random or random rubble through to much more formalised coursed random as we saw in "Stonechat 17". Stone shape/type obviously plays a part but in this respect it is primarily because this determines how you implement the putting together bit.

When building you should as far as is practicable work sequentially in layers, this avoids awkward gaps and tends to build a tighter wall. In the diagram on the next page the stones would theoretically go on more or less in the numbered order.

In masonry you tend to be working with specific sizes of stone, for sake of argument if you have nominal (i.e. allowing for mortar beds) 1, 2, 3 and 4 inch building stones and 5 and 6 inch jumpers then 5 inches can be made of 2&3 or 1&4, 6 inches can be made of two lots of 3, or 2&4, and 1&5. With walling life tends to be a little more complicated. You need to plan in advance, making sure that



you have a reasonable step between two stones. In the diagram above the step between 1&2 needs to be such that you are likely to have a suitable stone to make up the difference. Small steps which require thin stones are not a good idea – but more about that later. With regular stones and stylised diagrams this is all very well in theory; you put 5 in place select 6 and butt it up nicely. With less regular stone 5 is likely to be just too long or too short for number 6 to sit solidly over the joint of 2/3. It is likely to often be the case that in ensuring you use up larger awkward stones in selecting them you have to place them where they want to go, so 6 may well go in before 5 leaving one of those awkward gaps. Whatever the case the principles are essentially the same, the step between 1&2 allows for a good “sneck”(5), the “sneck” works well with 1 to facilitate placement of a subsequent building stone(10). Your jumper is sufficiently large enough to create a step above (5) in order that the building stone (10) is not insubstantial (i.e. allowing you to use bigger stone towards the base). Stones 6&10 work together, providing a suitable base for subsequent building.

One of the keys to using jumpers is to ensure a sensible step sizes and avoiding oversized jumpers higher up requiring thicker stones than otherwise desirable to make up to its height thus exacerbating the problem in terms of stone distribution and general diminution of stone thickness with height.

Dodgy joints.

The step between 3&4 is not sufficient for a suitable levelling stone or sneck. Thus the use of stones 7&8, whilst providing a good base for and sufficient step to allow for the placement of 9, creates a “plumb joint”. With irregular stone you should actually be able to avoid this but with more regular stone, especially where you have many very similar sized stones, it can be unavoidable if you are trying to avoid strict coursing or the use of lots of thin levellers. This is in fact the preferred method in much of Scotland, however it does have its setbacks. As joints are acceptable there seems to be less concern to cross them on each layer and as such they seem more likely to develop into running joints. You can also end up with plumb joints either side of a stone (“stacking”) which is a serious weakness.

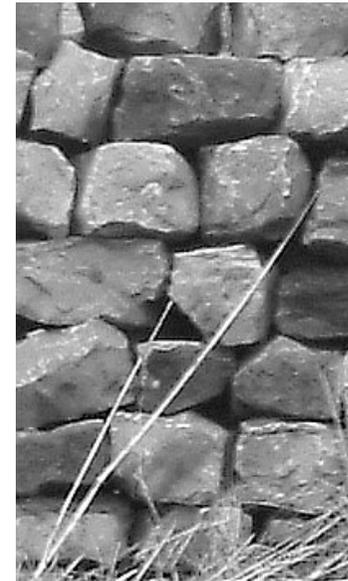
If you're not careful you can end up with a piece of wall like the one above, which of course is on the A55 across Anglesey and not in Scotland. It is interesting in as much as I have found it impossible to decide whether or not it is a random wall gone pear shaped or a coursed wall gone awry.

Basically if you are employing this method you must ensure that the joints do not extend beyond 2 layers, and you need to take care not to create any stacks, even of 2 stones.

The photo right shows a wall riddled with running joints, plumb joints and stacking, it also partially shows the problem of stepped joints. Given that wallers should keep to the tenet of 2 on 1 and 1 on 2, in the ideal world its ½ on 1 throughout. In reality the exact extent of the overlap is of little concern however you should always bear in mind that a slight overlap can be effectively little different to no overlap. Consequently if you place a lot of stones in subsequent layers with minimal overlap even though every joint is crossed it might as well be a running joint (hence the series of joints 2 stones in from the left in the photo right is a joint from virtually the bottom to the very top.) This principle also means that you can get diagonal running joints, as seen left, also on the A55.



Joints and stacking, Anglesey. © Sean Adcock



Diagonal joints, Anglesey © Sean Adcock

Some random patterns do employ thin levelling stones regularly within the face (as we shall see next time). Here the levelling stone is in effect a sneck. This is generally a practice which is frowned upon although often for the wrong reason. As long as the leveller runs well into the wall and is firmly held then it need not be a problem. Even though it is thin for virtually all rock types the potential for it being crushed is limited so it need not be a problem in the long term. The problem is that pressure points can be created. If a perfectly flat thin stone is sandwiched between two perfectly flat stones there is nothing the matter. However this is rarely the case and you will not have uniform contact. Rather there will be a number of points of contact which are likely to create pressure points. Depending on their distribution, the force in terms of weight placed upon them, and the nature and thickness of the stone itself, there will be an increased likelihood that the stone will crack and potential movement /settlement increased. This is a major reason for avoiding using thinner flat stones (especially slate) lower down in a wall built of much less regular stone. They do not mix.

Shape shifting.

Stone shape will of course affect how this all works in practice. For example angular stone can be used to change levels.

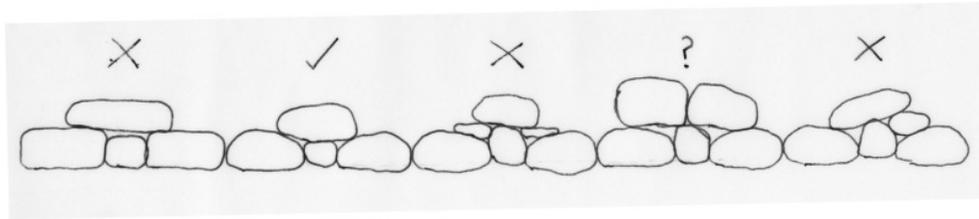
More irregular shaped stone provides more potential for solving the basic problems which occur. Of course it can also create other problems (but that's a story for another day, probably in the dim distant future when I manage to get my brain around exactly what they are!)

With less regular stone you can use complimentary shapes to provide and use suitable bases which are not perfectly flat, as seen below, to a certain extent removing snecks.



However here you can't just shuffle stones along as you often can with more regular stone, each stone has to sit where it wants to and/or it works shape wise, hence you can tend to get little gaps and hence to a certain degree you still effectively have snecks.

At this point I'd like to return to the problem mentioned earlier, of 'nipping' smaller stones. This problem applies equally to medium sized stones not laid sequentially, that is when filling between two previously placed stones. If the stone is small enough that you are going to be able to bridge across it, (rather than set two stones partly on it), then care has to be taken to ensure it is 'nipped' or held.



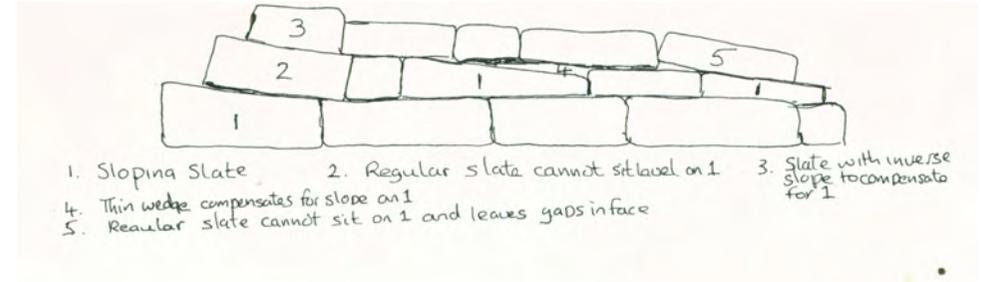
with regular stone you need to ensure everything is very level otherwise the stone will remain loose or just act as a pivot. With less regular stone if you cannot get it flat then it is probably best to allow a slight dip then you can find a suitable shape to nip it. If it is proud the chances are (unless you are very lucky with stone shape) you cannot bridge it and nip it. Unless you use absolute slivers compounding the problem, you have to have two stones sat on it. This will mean a very limited (if any) overlap, and often the start of a stepped joint.

Wibbly wobbly.

"Wibbly wobbly" – getting a bit technical now. You have to be aware that even relatively regular stone does not have a uniform thickness along its length. Where this is only a few millimetres it is of little practical concern. However in general you need to be careful not to create "skis-slopes" a problem which can similarly occur where you are working with less regular stone and making use of the slopes to change layer depth

This was noted in a previous Stonechat article in June 1995 (Stonechat 9) which I shall unashamedly repeat verbatim.

"Working with cut (sawn) slate is not as easy as it looks. The stones are not always as regular as they appear, often tapering slightly from one end to the other so that when you place a stone on top



of them it slopes horribly. The ideal solution is to find another stone with an inverse slope to place on top thus cancelling out the difference. Fine in theory but in practice reliant more on luck than judgement. The alternative is to find a sliver which is tapered and can be used to level off the slope, if this sliver is not tapered an undesirable gap will be left below the next building stone. Failing in either method you are stuck with a sloping stone, the next stone on top of this will follow this slope and hence the problem will persist.

Unfortunately there is no miracle cure to this problem, in fact with coursed cut slate walls the coursing is often wavy as dictated by the nature of the stone and not necessarily sloppy workmanship."

As a final addendum from an aesthetic viewpoint the occasional slight ski-slope platform is not a complete disaster (the technical ramifications of sloping, especially excessive sloping are beyond our scope here). This is especially true with more random stone stones set slightly off of true. Coursing/levels tend to show more from side angle than straight on (remember the 'coursed rubble' example from "Stonechat 17" unless it is particularly sloping or an extensive length. Use this to your advantage by keeping this 'error' to a minimum, bearing in mind that an individual stone sticks out like a sore thumb, several in a row can blend in unless you start to create waves and get really "wibbly wobbly".

Now 2 paracetamol and wait for the next exciting instalment of "as clear as mud" when we'll have a look at a few more random patterns which will hopefully draw a few of these strands together. We live in hope.

Sean Adcock

Britain & Ireland's Walling Treasures: The stiles of Askrigg



Askrigg in the Yorkshire Dales is a village awash with stiles, the church grounds alone have seven.

There are a wide range of 'styles of stile' in and around the village but what makes it stand apart from other areas are those found in a field South-east of the village on a path to Worton. The four sides of the field have stiles of varying degrees of finish and design, and which do not necessarily seem to be associated with public footpaths.

I first came across these stiles in Geoff Lund's "Yorkshire Stonewaller" (reviewed by Tim

Roberts way back in "Stonechat 10": Summer 1996). Armed with the book I went in search of these stiles following a talk to the Otley & Yorkshire Dales Branch back in 2004. My epic search became a two part article in "Waller & Dyker" which you can now find tucked away in the books/articles part of my website www.dry-stone.co.uk.



One of the ornate squeeze styles featured in Lund's "Yorkshire Stonewaller", situated on the northern boundary to the field. © Sean Adcock

To my mind the overwhelming question remains 'why in the middle of nowhere?' This is still unresolved but the following information has been offered by John Heselgrave...

There is a book entitled Yorkshire Village by Marie Hartley (a prolific and well regarded Dales Author who died recently aged 100) and Joan Ingliby. There was a long standing family called Winn (Wyn) who lived in Askrigg. Thomas Wyn in 1474 was described as a Yeoman of Askrigg. George Winn was a tenant of Nappa Hall in 1804 and had a son also named George who built a 3 storey house (Winnville with stone lions on gateposts and now a pub) on Askrigg Main St in 1841. He was a significant land-owner mainly to the East of the Town and it is presumed that he ordered the walling to be done to a high standard with a distinctive style. George (Jnr) drowned in 1876 whilst fording the river near Aysgarth - a window at the east end of Askrigg Church is to his memory.

Meanwhile you can now look up more about Britain and Ireland's Walling Treasures at <http://myweb.tiscali.co.uk/wallingwonderland>

Sean Adcock

This type of squeeze style, with platforms either side of gap formed by two bull-nosed/round ends is quite common in Wensleydale and especially immediately around Askrigg. Michael Roberts in "Gates & Stiles" (Gold Cockerel Books, 2002. p91) suggests "There are flat stones either side so that any load such as a basket or sack could be rested on the top while the bearer negotiated the gap. Stiles were great meeting places in the old days and one can imagine people to gossip and exchange news as they rested their bundles on the slabs before continuing on their way". In terms of their eligibility for this series their inclusion might be a slight cheat as well hidden mortar is involved, but striking none-the-less.



The Most ornate of the stiles, butting up to a barn on the south side of the field © S Adcock

BRANCH ROUND UP

Membership

As membership is technically due in January renewals will be sent out in the Autumn Stonechat, for those that have only just renewed this might seem a little precipitate however it will allow us to avoid such anomalies in future.

Branch Meetings

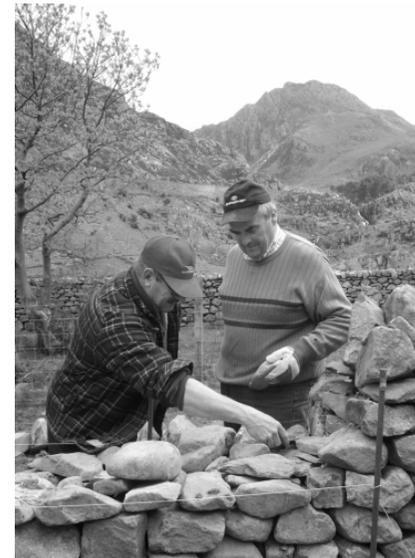
Next meeting will start at 7.30pm prompt at Saracens Head Cerrig y Drudion, please note the change of venue (by a few hundred yards). Food is available, arrive early for a chat. There will be a brief discussion of Branch business followed by a talk on hill forts from Fiona Gale, Denbighshire County Archeologist.

Competitions

The Snowdonia Society competition this year will be part of the Capel Curig Carnifal, on July 18. Our display and tent will be present, if you're not competing why not give us a hand for an hour or two and then enjoy the carnival and watch some paint dry - I mean observe the finely honed skills of the competitors, minus Sean who following being given the trophy last year for his third successive victory will this year be taking a rest (and giving everyone else a chance) and Judging instead. Details from Snowdonia Society Tel:01690 720287



Sean in action at last years Snowdonia Society competition, taken from Snowdonia Society website <http://www.snowdonia-society.org.uk/index2.php?id=32>



Instructor Geraint Evans (left) explains to Gwynfor Jones from Brynsiencyn how to stabilise a building stone. Blaen y Nant Taster day. © S Adcock

Planning for our competition at Cerrig is underway, Vic Hollings has agreed to travel down from Yorkshire to judge alongside Iolo Jones who will be making his debut. Some sponsorship has been confirmed from Justin Kellet from Aber Quarry, Moelfre but we still need several hundred pounds. Any ideas? If there's a local business you use why not ask them, even 20 or 30 pounds would help, let Sean know and he can follow up. All we need now are competitors and on site help and that means you! Don't forget there's To will be snacks, cake, tea, coffee and possibly a can following this year's Competition and it's free.

Training

Press coverage has sited to a fair amount of interest in our programme. So far we've had two successful taster days at Blaen y Nant and Cae Gwyn, thanks to Gareth, Geraint and Craig for giving their time. As we go to press numbers for the next two at the same venues are

looking good, although bookings for our full training courses are a little disappointing.

We're also in ongoing discussions with Loggerheads Country Park to set up a programme of courses in the Clwydian Range AONB, probably for next year.

Meanwhile there's a practice day for members on BBQ day at Blaen y Nant. Get some informal training or turn up for part of the day and drink tea, chat and place the occasional stone.

Socials



Beudy Llwyd and Foel Goch from the clapper bridge. © S Adcock

We are holding a BBQ at Blaen y Nant as part of the Training Course, you'll need to book and pay £5 (form enclosed.) This will be on the Saturday of the training Course with food from about 6pm. As mentioned above as well as the training course there will be an opportunity for members to have a bit of a get together and do some walling, a novel idea! Come along for an hour or two place the odd stone, have a chat, drink tea- the urn will be on the go all day and the wall is just a few yards away.

The BBQ will be taking place at Beudy Llwyd a renovated barn on Blaen y Nant. It used to be a smithy when the drovers gathered stock at the head of the valley before heading off towards Capel Curig and beyond. Its alongside a river and clapper bridge, with a waterfall in the background an idyllic spot and all weather catering. In the last 10 years around a mile and a half of wall has been renovated on Blaen y Nant, all sorts of features, shapes and sizes. There will be a guided walk for all interested, from about 5pm onwards.

Film Night

We've had permission from "Fuzzy Slippers" to have a public showing of Dan Snow's DVD which will be on Friday 23rd

October At Caban, Brynrefail, Caernarfon, in conjunction with the "Occasional Cinema". The film will be preceded by a short presentation on Dan's books starting at 7.30pm. Themed food is available from 6pm, best arrive 7 at latest if you want to eat. The food has to be booked directly with the Caban. Entry will cost £5 in aid of Branch and Occasional Cinema funds. Members will be sent a circular at the beginning of October with further details.

Displays

We are hoping to update the display and have put a grant application to CCW which will hopefully pay for a proportion of this as well as a new Training course leaflet and a digital projector so we can spread the word!

Meanwhile the tattered old display will be stopping off at a number of spots (see Diary) and would really appreciate some company....

Committee Meetings

The diary usually notes the date of the next committee meeting. If there's anything you feel needs bringing to the attention of the committee please contact Craig. Copies of minutes and action points are available from Sean should any member require a copy.

Diary

Date	Event	Contact
27.6	Taster Day, Blaen y Nant, Nant Ffrancon.	Gareth
1.7	Branch Meeting. 7.30pm Saracens Head, Cerrig y Drudion Guest speaker Fiona Gale, Denbighshire County Archaeologist will be talking about hill forts.	
4.7	Taster Day, Cae Gwyn, Cyffiliog, Ruthin.	Craig
18/19.7	Training Course, Cae Gwyn, Cyffiliog, Ruthin.	Craig
18.7	Snowdonia Society Competition, Capel Curig Carnifal.	Sean
25/26.7	Training Course, Blaen y Nant, Nant Ffrancon.	Sean
25.7	Practice meet, Blaen y Nant, Nant Ffrancon.	Sean
25.7	BBQ Blaen y Nant, Nant Ffrancon.	Sean
26.7	Display Eyrirs Tractor gathering	Craig
5.8	Committee meeting.	Craig
5.9	Competition, Cerrig y Drudion Show.	Sean/Craig
12.9	Demonstration Nant Peris Carnifal.	Sean
23.10	Film Night, Caban, Brynrefail, 7.30pm showing Dan Snow's "Stone Rising" in conjunction with "Occasional Cinema".	Sean
4.11	Branch AGM. Foelas Arms, Pentrefoelas. 7.30pm. Guest Speaker Philip Clark (former DSWA international co-ordinator)	

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