

Challenging builds and more



Cut Hill makeover

Many rural dry stone walls, particularly the older ones, are culturally significant, mostly telling their story of early European settlement. With the passage of time, livestock pressure (including 'roos') and in the absence of continual maintenance they can degrade.

Aside from time consuming, putting these ruinous walls back together is technically challenging. Most of us find that the result of our tinkering never looks anything like 'the real thing', there never seems to be enough stone, and it soon tumbles back down.



This issue

Ellipsoidal challenge

Cut Hill rehab

Wall in a cage

Old walls under Brisie

Walls and floods

Walls in NZ

Fell ponies

Historic Rajasthan

Letters

To celebrate its twentieth year, the Dry Stone Walls Association is planning a field day in South Australia on Saturday 22 October. We hope to assemble a team of certified dry stone wallers to work together showing how a seriously degraded dry stone wall can be brought back to the good life. This will be a demonstration, not a training workshop, but it will be interactive. Spectators will be encouraged to question the wallers, seek tips, offer suggestions and maybe try their hand at a bit. We plan to film the event and hope that it might be part of a bigger Festival of Walls, celebrating our twentieth.

There will be a lot more information in the September edition of *The Flag Stone* – this is just to encourage you to put 'trip to SA' in your diary. We have a terrific venue, not far from Adelaide. Some visitors might stay for half an hour, some for the day, others might return later.

The ellipsoid challenge – Geoff Duggan (DSWAA member)



My son James, our new apprentice Jack and I were coming to the end of a long dry stone walling job for our clients in the Southern Highlands of NSW. We had to terminate the wall in the immediate vicinity of the new house they are getting built. I was going to finish the wall with a traditional straight wall end (or Cheek end). They wanted to finish the wall with something special and suggested a round pillar or barrel for the end of the wall. I sketched up a truncated ellipsoid shape as little more challenging to build and more appealing aesthetically. They loved it, then I thought how am I going to build this?

There were a few challenges, mainly building a dry stone structure with a reverse batter. Dry stone walls usually taper in as they gain height, the ellipsoid had to taper out for the bottom half. The building process is essentially building layers of a stone circle each with a different radius or circumference. Starting narrow at the bottom getting wider toward the middle and then getting narrower toward the top. If you can imagine a sliced pizza with different diameters this is what we had to build. The problem was this stone naturally comes as a parallelogram, so we had to do a lot of cutting on one side of the stone to get our pizza-slice shapes of stone.



Working with stone, we pretty much always use string lines and frames. For the ellipsoid, I fashioned a silhouette formwork of one side of the shape we desired and had a centre pole. From then on it was simply measuring from the centre pole to a reference height on the formwork as a radius measurement. Then making sure we were level, we had to transfer this radius measurement at the determined height for each layer as we built up.

The ellipsoid (cont.)



The most challenging part of the build was the bottom few layers. Each stone had to have the right angle on its face in order to keep the shape, with the stone face laying or leaning outwards as opposed to inwards as we usually do. Also, as the ellipsoid was getting wider as we come up, we were building against gravity. All stones had to have sufficient length way back in toward the centre of the structure to ensure we had enough cantilevering gravitational forces to prevent it toppling over. Once we got to the widest part it was pretty straight forward, building circular layers of stone diminishing in radius.



Finally, the last stone for the top had to be solid enough to help secure and protect the structure below. Again, out come the stone saws and grinders in order to fashion the shape to complete the project. With a bit of time and my recipe for lichens, mosses and weathering stone, it should all blend in very nice. I think James handled the challenge very well and it was also a nice introduction to dry stone walling for Jack.



Geoff Duggan is a Dry Stone Walling Master Craftsman (UK) and a member of DSWAA

Invisible mending at Cut Hill



Above: The 'mighty' Cut Hill wall as it was built in 1868.

In October 2017 *The Flag Stone* (#40) carried a short piece on the damage done, by an errant motor vehicle, to the iconic Cut Hill dry stone wall. Built in 1868, long before even dreams of the motor vehicle, this is unquestionably one of South Australia's most important dry stone structures.

DSWAA lobbied the local council, transport and infrastructure department, environment department and local member to have the wall repaired and most importantly to a high standard.

In January 2019 *TFS* (#44) was able to report on 'the high standard of the repair work'.

Recently I met **Mat Carneiro and Rick Wheatley** (*Structural Stonemasonry*), two wallers who completed this fine but challenging job.

Below: The damaged section, 2017



Invisible mending *(cont.)*

On 24 September 2017 we (**Matt and Rick**) were contracted by the Department of Planning and Infrastructure to repair a section of dry stone walling at the Cut Hill site. About eleven metres of the top section of the wall – the parapet at road level – had been effectively demolished by the impact of a car. The repairs we undertook were to preserve the existing structure and assist in the preservation and longevity of this historic dry stone wall. The huge retaining wall and the parapet are all dry stone except for the copes which are mortared.

Our approach to heritage conservation and restoration is in line with the Burra Charter, the preferred protocol being the retention of as much original building fabric as possible. We focus on a conservation plan addressing only items that contribute to the continued deterioration of the original building material or structure. In other words, we aimed to restore the wall to its condition immediately prior to being struck by the car.

The most immediate challenge with this project was to establish a safe work site, as the five metre-high vertical wall is perched on a cut (hence the name) into a natural forty-five degree hillside. Clearly this had been a monumental achievement by Jabez Grimble whose team built the wall back in 1868.

Next, we had to find and retrieve about 4-5 tonnes of original building stone that was strewn about at the base. We used a pulley system to bring these stones up the work site and set aside the cope stones, identified by the lime mortar still attached.



4-5 tonnes of original stone at base of wall



Stripped out and cleaned for rebuilding

We stripped out the damaged section of wall until we got down to a sound and true base. We then laid the original building stone according to the basic principles: length into the wall; through stones to tie the wall together; and

tightly packing the hearting with shards before building the next course. The top course was then levelled off with 20 mm clean stone.

Finally the copes were set on a lime mortar base and the joints tooled to keep moisture out, true to the original style.

Ironically, a year later a second vehicle crashed into wall about forty metres along from the first accident site – another job for us! It is strange that there should ever be an accident on this straight section of road and where the wall is generally well separated by a parking bay. Speaking of which, next time you drive on the Victor Harbor to Adelaide road, pull over at Cut Hill and take a look over the parapet at a truly remarkable piece of nineteenth century civil engineering.

Invisible mending *(cont.)*



L. Top levelled with 20mm clean stone and ready for copes



R. Hidden side of wall rebuilt to original style



L. Copes set in lime mortar



R. The front of the restored wall



Looking up from the base of the wall

TORUS – dry stone in a cage – *Christine Cholewa*

This project was an initiative of The Rural City of Murray Bridge, and collaboration between Council's Arts Development, Murray Bridge High School staff and students and myself. The result is *TORUS*, a colourful public art work that acts as a gathering place, with handmade tiles, paving and curved gabion dry stone walls and seats.



Curved gabion wall, seats and central tiled axis

The aim of the project was to develop a real-life public art project with the students' involvement, so they gained direct hands-on experience that had real-world outcomes in a park across the road from the school.

Working with the students across Years 8 and 11, together we brainstormed ideas. Students were invited to find words that best describe their aspirations for Murray Bridge: 'safe, clean, interesting, open, creative, exciting, not too big, inclusive, sporty and multicultural'.

Asked what they would like to see in the park, students suggested a space more inviting for young people to spend time there, rather than just traverse through it.

I reviewed all the possible concepts that we came up with and began to develop them further. To my surprise and delight, the strongest idea that emerged as an interesting 'thing' for us to make, was based on the concept of the humble donut! I know, a bit of a surprise right?!

Initially, I was drawn to the donut form for its simplicity as two concentric rings. Then I stumbled across a 'torus', a donut shape that has roots in nature, mathematics, architecture, philosophy and cosmology. Donut shapes are everywhere! I also liked this idea as a starting point because this shape has no corners, no hierarchy: the circle is continuous and collective, it is whole and inclusive. These qualities fit nicely for a community space. The donut-shaped public artwork was to be a place for people to meet, spend time and hang out, as well as feel safe and with a sense of belonging.

Students contributed to the fabrication by designing, making and glazing over 280 circular terracotta tiles. Depicting diverse cultural and family stories, these tiles were destined for the centre of the artwork.

Inspired by various rich meanings, *TORUS* is essentially a seating structure, comprising gabion dry stone walls and wooden seating, both curved like a donut or torus, with the handmade terracotta tiles paved in the central area to repeat the circular theme.

We were lucky to get access to sandstone for the gabion dry stone walls, locally salvaged from the recently demolished old Bridgeport Hotel, built in 1884. Originally, I wanted to construct standard dry stone walls, but with the expectation that the students would be hands-on to help build them onsite, this was not feasible. The next best option was to use steel cages as the support structure and create gabion dry stone walls that curve around in a donut shape. This made it possible for the students to arrange the stone in the cages. Some of the stones were painted in bright colours, to reference sprinkles on a donut and bring some playfulness to the artwork and the park.



The artwork successfully navigates the dual territory of being a contemporary public artwork that functions as a meaningful piece of urban furniture and transforms a public space. The challenging site was selected by Council as an underutilised, dusty thoroughfare used by students en-route between home and school. *TORUS* is now enjoyed as a destination focal point for the park, that is welcoming and brings people of all ages together.

Christine Cholewa is an Adelaide artist who enjoys collaboration and working on public art. Trained as a glass-blower, Christine is currently exploring stone carving, sculpture, stone wall building, and making art. Christine was recently appointed part-time Administrative assistant for DSWAA.

Buried walls in Brisie motorway

The following article is based on a press release from Brisbane City Council in February 2022.

One of Brisbane's most significant historical finds in decades was uncovered in the heart of the CBD as work got underway on the Brisbane Council's Metro project.

Lord Mayor Adrian Schrinner said construction on the Brisbane Metro's Adelaide Street tunnel portal discovered walls of a convict-era hospital building dating back to the mid-1800s, a Lands Office building dating back to the 1880s, and significant artefacts

'Uncovering the convict-era medical facility is one of the most significant recent archaeological finds regarding European history in Brisbane,' Cr Schrinner said.

'Brisbane's convict past is considered of global significance. The 30-odd metres of convict era dry wall discovered helps us learn more about the establishment, evolution, and pattern of European settlement of early Brisbane as a penal colony.

'The works are being undertaken within a highly historic stretch of the city. These were the first streets of Brisbane's European settlement, and they have the potential to yield archaeological artefacts which tell the story of those earlier times.'



Brisbane City Council has an Archaeological Management Plan which regulates how items are recorded in place, and if necessary, removed.

'The artefacts are currently in storage; at the completion of the project, and after proper photographic recording and documentation, the more interesting items will be made available for public viewing and interpretation.'

Brisbane Metro Project archaeologist Angus Crawford of Everick Heritage said that the convict-era wall was potentially the oldest dry stone wall discovered anywhere in Queensland.

'It's an incredible discovery, we're fairly certain it was here by 1840 and could date back to the 1830s,' Mr Crawford said.

'The stone is Brisbane Tuff, it would have been quarried from the cliffs at Kangaroo Point, and ferried across the river.

'You can see marks in the stone from the picks and chisels which would have been used to extract the stone. It's a remarkable find.'



Old dry stone wall



Stone survival – Bea Teows (DSWAA member)

DSWAA member (Bea Toews) recently stumbled across a copy of *Water, Stone, Heart* by one Will North. This in a second-hand bookstore in Thailand. Of course it was ‘Stone’ that grabbed her attention, although also ‘North’, but that’s another story.

In an email she commented: ‘Though an unbelievable love story, it’s also true. It’s about a village (Boscastle) in Cornwall that flooded severely and unexpectedly in 2004, and that is famous for its stone work. A bit Zen in places and a bit bodice ripper in others, and pretty good for the most part. Would have meant nothing to me did you not build dry stone walls and had I not recalled a piece in *The Flag Stone* (#52 September 2021) about Port Germein Gorge. In the wake of eastern Australia’s recent floods it might give some heart to hear from the National Trust (UK):

Boscastle’s story is one of a remarkable turnaround. Within days of the catastrophic floods a standard had been set for the huge recovery task ahead; ‘visitors coming back to the village should not be able to tell what has happened’. And you can’t.



The narrow river which runs through the centre of the village has been deepened to create extra capacity but still retains its natural feel thanks to efforts to mimic the natural river system with pools and ‘riffles’ (shallower stretches) that are good for wildlife.

Trees in the valley above the village have been kept rather than felled to act as traps for sediment and debris. Stone in keeping with the character of the village was used to rebuild garden walls and the floors and walls of houses and businesses.

Sympathetic measures like these have meant Boscastle remains a scenic village full of Cornish coastal charm, popular for walking and wildlife spotting or simply for pottering around the attractive shops and cafés.



The Association’s vision is that dry stone walls and dry stone structures (dsw&dss) are widely accepted for their unique place in the history, and culture of the nation and for the legacy they represent.

Our goals are:

- To inform and educate the nation about the cultural significance of dry stone walls and structures (dsw&dss) in Australia and their associations and meanings for past, present and future generations.*
- To document dsw&dss and draw on historical records in order to encourage appreciation, conservation, maintenance, repair and interpretation of those of cultural significance.*
- To establish disciplines and certification systems that can contribute to the care and construction of dsw&dss.*
- To assist in ensuring that new construction, demolition, intrusions and other changes do not adversely affect the cultural significance of dsw&dss and that modern uses of them are compatible.*
- To respect Indigenous heritage places and cultural values, and, in particular, to assist in the conservation of those associated with dsw&dss.*

Walls in other countries – *Richard Tufnell*



Corner of field on Edmonds Farm, Kirikiri

The walls built by Scottish emigrants around Dunedin, in the south of South Island, are fairly well known. However, the old walls in North Island are virtually unknown, not least because nearly all examples are well off the main highways. There is an increasing number of dry stone wallers across New Zealand, but these almost entirely concentrate on landscaping work.

To begin with, there are a few stone walls near the capital, Auckland, such as in Ambery Regional Park. During the 1840s, 552 immigrants from the ships *Duchess of Argyle* and *Jane Gifford* arrived in the region and began farming land bought from the Maoris. The majority were farmers who chose this region, because the soils were highly productive. These English and Scottish settlers separated their fields with stone walls which radiate out from the base of Mangere Mountain. Another park in greater Auckland has stone walls built by an English immigrant as late as the 1940s.

In the far north, near Kerikeri, are the remains of the Edmonds farm. This is a particularly interesting property as it provides one of those rare examples of a detailed history of the builders of the old walls. John Edmonds was a stonemason from Yorkshire, who spent five years with the Missionary Society, before purchasing land nearby, moving onto it in 1840 with his wife and children. He proceeded to build a stone house and enclose the land, which was lived in by the family for some forty-five years until the house was destroyed by fire in 1885 or 1886.



Remains of a dry stone stock enclosure



Field systems on Edmonds Farm

Edmonds may have been attracted by the abundant availability of basalt on the land. The image above shows the remains of a stock enclosure with the plentiful stone still in evidence around it.

Walls in other countries (*cont.*)



Basalt is brutish to work normally, hard as steel and extremely heavy. But in most of New Zealand, gases mixed with the rock during ejection from volcanoes have ‘foamed’ the material, so that each stone looks as if it is riddled with woodworm. It is still heavy though, and very abrasive thus resisting sliding well. The image above gives an idea of the nature of the stone.

The walls are massive, many being five feet wide at the base and 30” at the finish level; and thus may be described as consumption walls. As a rough estimate, each yard contains close to 2 tons of material.

Stone buildings are associated with an extensive series of rectilinear paddocks and yards enclosed by dry stone walls, and in a swampy freshwater hollow to the west is a stone-lined well. The building of the stone house and the associated enclosure walls were completed by 1858. The land was surveyed in 1860 by one Mr. Clark, and the survey plan shows a farmlet of a dozen paddocks and yards enclosed by the stone walls. The area fenced in by stone walls was ‘70 acres 1 rood 4 perches’. The recorded uses of enclosed areas were variously orchards, the cultivation of oats, pasture and stockyards, indicating a mixed farming operation, with the function of the walls being to control farm animals. Some repairs have been undertaken, but overall the walls are in fair shape, par-

ticularly as maintenance has been otherwise minimal. Edmonds was part of a team that included five sons, but it is still remarkable that so much stone was collected and shaped for the house and barn, and then more stone collected and built into walls around all the fields in less than sixteen years. This was on top of all the other work necessary to create a working mixed farm operation.



This church is one of a number we tracked down, all fairly similar, with drystone walls encircling the cemetery. They are Maori churches erected after their conversion to Christianity in the mid 19th C. The gravestones show half Maori and half anglicised names, such as Wayopa Jones, and tend to be decorated with odd little domestic items – a football perhaps, or a mirror. Many are positioned very close to, or even on a beach, reflecting the overwhelming importance of the ocean both past and present to these people. Their remoteness makes them easy to remain overlooked.



Beautifully crafted bread oven, Edmonds farm

Richard Tufnell, a Master Waller (UK), has visited 44 countries, mostly in pursuit of his passion. This article is based on a piece first published in *Waller and Dyker*.

Readers might also be interested in an article written by Stuart Read for the *TFS#39 (May 2017): Otuaataua stone fields – precious, contested land*

Fell ponies, as important as stone walls? *Libby Robinson*



Fell ponies in the Lake District (Cumbria) are thought to pre-date Roman times and are considered 'native' to the region. However their future is possibly at risk from rewilding programs that could quarantine much of their natural habitat.

Libby Robinson of the Fell Pony Heritage Trust advocates for safeguarding Fell ponies as part of Cumbria's equine heritage. She argues that Fell ponies are just as important to Cumbria's heritage as the lakes, rivers, fell farms and dry stone walls.

I take my hat off to my Fell pony mares this morning; it's cold with freezing rain blowing across the fell and they were all standing in a line, bottoms to the wall which is just a little higher than their backs.



Yesterday it was snowing up here and they were out in the open grazing, but that wet wind has brought them to shelter under the wall. It is said that nature has seen to it that the correct height for a Fell pony should be just below the fell wall as taller ponies catch cold and don't do well.

I am so lucky to be able to see this living environment but which is becoming more endangered. A good example is the side of a dry stone wall which is such an iconic part of this lakeland culture, just like the Fell ponies. For centuries this has been a place where ponies will find shelter. Their droppings and foot marks enrich the soil which is warmer in these protected areas, providing a place for insects to gather and to lay their tiny eggs. These hatching grubs provide food for voles, mice and shrews and for their growing families sheltering in the wall. This small mammal population in turn provides food for the birds of prey like the buzzard and short-eared owl. This is all part of the balance of nature, the fundamental structure of a web of life.

The true hill-bred Fell pony holds onto its own genetic characteristics, but is constantly evolving in response to environmental variables and breeding a type that physically and mentally adapts to life on the open fell.

Keeping these unique upland herds is the only way of maintaining the most suitable genetic characteristics. The breed population will adapt to any climate change as it will evolve with it.

Historic dry stone walls of S-E Rajasthan *Dr. Madhu Sudan Acharya* *A sequel to a paper published in The Flag Stone #52 September 2021*



The Cyclopean wall of Rajgir

Dry stone is the world's oldest construction material, used since times immemorial. The pyramids of Egypt and megaliths elsewhere were constructed from dry stones. Ancient sites in South-East Asia (India and China), South America and Europe all utilised this material. Earliest records in India mention existence of the Cyclopean wall with 40 km of undressed stones encircling Rajgir city in Bihar in the 5th century BC (*above*).[1] Surprisingly, dry stone walling as traditional intangible heritage listing by UNESCO (2018) does not mention this technique which existed in India 2500 years ago.[2]

Dry stone walls

- Utilize local knowledge, material, skill and manpower.
- Transform landscapes, creating bio-diversity and microclimate.
- Have low carbon footprint.
- Reflect harmony between humanity and nature.
- Are deeply rooted in rural areas.
- Are user-friendly.

Efficient use of local material involved principles of gravity and friction, resulting in stability of monuments. Such structures withstood earthquakes of low intensity and allowed drainage of water which was used to good effect in lower terraces of Machu Picchu of Peru.[3]

With the advent of Portland cement, interest in this age-old technique was lost. However, architects and heritage consultants are now integrating dry stone walling into ecologically sound buildings. Various applications of dry stone walling in Rajasthan, in the past and present time, are summarized in the following table.

Purpose	Area	Application
Protection from enemy attacks	Military	Forts and barracks
Protection from wild animals and enclosure of domestic animals	Rural	Farm boundaries, shelters/shacks
Soil, water and wind management	Rural, forest lands and highways	Check dams, terracing, retaining walls, shelter
Nature mimicry and aesthetics	Landscaping	Parks, recreation areas, community places and homes

Walls in historical sites of S-E Rajasthan (*cont.*)

Dry Stone Construction in South-East Rajasthan

Practice of dry stone construction has been a common technique in rural and semi-urban areas of Jhalawar district in Rajasthan extending over an area of 6219 square kilometres. On account of high average annual rainfall (945 mm) and an agriculture economy, dry stone has been used in soil and water management and farm field protection. There is abundance of limestone, sandstone and basaltic rocks in the Hadoti plateau and nearby Malwa region of Central India. Undressed and dressed stones and wastes from mining areas are used. Though skilled workers are available in the locality, they rely mostly on the practices inherited from previous generations with little explicit regard for the principles of physics.

Dry stone Construction in Historical Sites

Numerous historical sites exist in South-East Rajasthan (Hadoti region of Jhalawar, Baran, Kota and Bundi districts) and the surrounding area of Madhya Pradesh (Mandsaur district). Dry stone forts, palaces and barracks were often constructed on the river banks.

Gagron Fort

Situated 12 kilometres from Jhalawar town, Gagron fort is a UNESCO heritage site (2018). Its strategic military importance has been described in earlier issue of *The Flag Stone* (#52, Sept 2021). [4] Remains of the dry stone entrance wall can be seen dating back to 1195AD (see left). The unique location of this fort means it is surrounded by Kalisindh and Aahu rivers on three sides and a moat on the fourth side. Recently, the Government of India Postal Department issued a postage stamp recognising this fort.



Shergarh Fort

This fort situated on Koshwardhan (meaning 'increaser of treasury') Hill was constructed prior to 790AD by Parmar kings of Dhar (Malwa) during the reign of Vakpati to Naravarman. Rulers of this period practised Hindu (Shaivism), Jainism and Buddhist religions.[5] Shersah Suri took control of this fort from the Mughals in 1540AD during his Malwa campaign and rechristened it to its present day name: Shergarh.

Shergarh is 65 km from Baran and about 70 km from Jhalawar town. The fortification walls and an arch are lone survivors of dry stone constructions in this fort on the banks of Parawan River (see right)



Walls in historical sites of S-E Rajasthan (*cont.*)

Mau Borda Fort and Palace

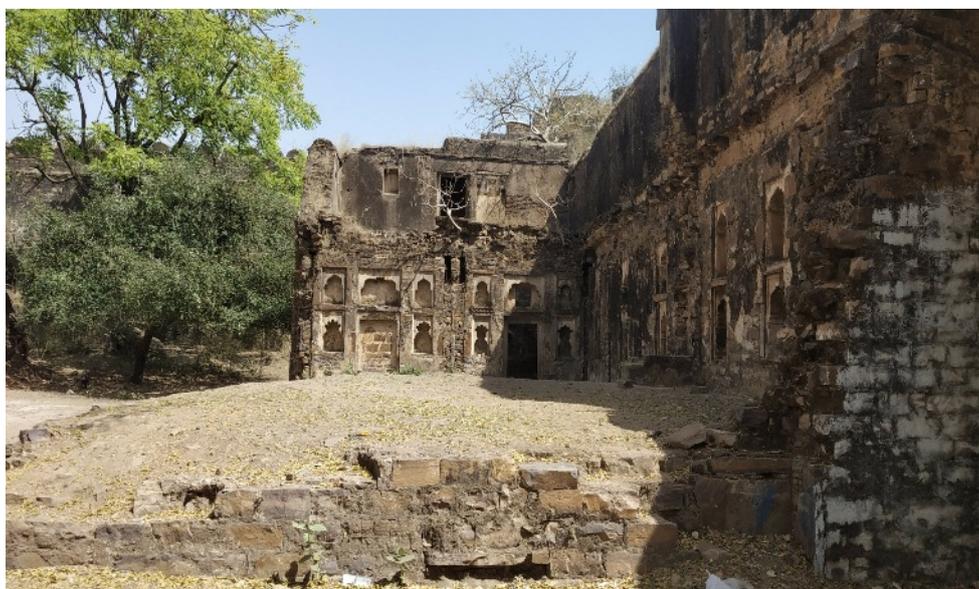


Established in 1478AD after the fall of Gagron, Mau-Borda was capital of Khichi Chauhans. Palaces and the fort are situated 24 kilometres east of Jhalawar town on the bank of Ujad River; a tributary of Kalisindh River.

Most of the dry stone construction has been restored with lime-surkhi plaster except for the wall of the fort, an arch and a temple (*see left*).

Nahargarh Fort

Nahargarh (literal meaning: abode of tigers) fort is 73 km from Baran. Redstone is the major construction material replicating the Mughal architecture of Red Fort of Delhi. Constructed in 1697 AD, the fort has the remains of a dry stone structure in the Queen's Quarters (haram) (*see right*), an earlier arch and a fortification wall, all part of the queen's palace. However, Mughal architecture mostly used lime plaster as seen in Diwane Khas (assembly hall of royals), Diwane Aam (assembly hall of commons) and the main palace in the fort.



Hinglajgarh Fort

Hinglajgarh Fort is 26 km from Bhanpura town in Mandsaur district of Madhya Pradesh. The dense forest catchment area of Gandhisagar Dam on Chambal River secured it from enemy attacks by the Mewar kingdom of Rajasthan. This fort was an archeological centre of excellence for about 800 years from 4th to 12th centuries AD as old statues and artifacts were found from the Gupta to Parmar dynasty kingdoms.

The dry stone circular fortification wall (*next page*) and the main entrance gate are well preserved to this date (*see left*). Restoration work in this fort was commissioned by Queen Ahilya Bai Holkar of Indore (Madhya Pradesh) as a religious place.[6]



Walls in historical sites of S-E Rajasthan (*cont.*)



Dry stone circular fortification wall at Hinglajgarh Fort

Utrana Fort



This fort is in Utrana village of Bundi district (favourite place of English Nobel Laureate and author Rudyard Kipling) amidst dense forest and remained obscure for many years. Archeologist and explorer O.P. Kukki first drew attention to this fort, totally built with limestone and named "Stone Fort".[7] Kuki estimates construction of the fort and the double storey palaces with dry stone stairs to date back to the 10th and 11th centuries AD. Pratihara (Meena) of the Usara tribe were the landlords in this area prior to Rao Deva who established the Hada kingdom of Bundi. Two large dry stone turrets are the remains of ruins of Utrana Fort (*see left*). Urgent conservation of this fort is needed as many rooms are in shambles.

Ruins of Dalhanpur

In dense forest lies the ruins of Dalhanpur on the banks of Chappi River, 54 km from Jhalawar town. Dalhanpur was a seat of mystics and meditators during 4-6th centuries (golden age of Chandragupta II, known as Vikramaditya of Avantika, Madhya Pradesh).

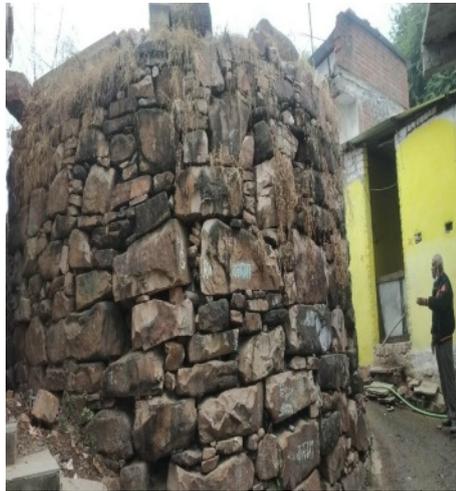
A dry stone residential area was part of the monastery. Temples with carved pillars, torans (gateways) and other sculptures are scattered over 2 km stretch. Now restoration work has been undertaken by Government with lime surkhi plaster which is quite out of historical context and shows little regard to location specific construction techniques/heritage of the site (*see right*).



Walls in historical sites of S-E Rajasthan (*cont.*)

Fortification walls of Reechhwa and Bakani

Fortification walls were constructed using massive dry stone in Reechhwa and my native place Bakani (21 and 42 km respectively from district headquarter at Jhalawar). There had been a local tradition of construction of village deity temples prior to establishment of the settlement. Remains of such walls (*see below*) exist even today, although stones from the fortification wall have been taken and used in construction of houses. Negligence by the local administrative council (Panchayat) to heritage conservation is evident at these sites.



Status of dry stone construction sites

Numerous historical sites are scattered over the region as discussed in this paper. Besides heritage importance, evolution of construction techniques with local materials and skills is a subject of interest to architects and the tourist sector. Sporadic efforts in construction have been observed but there is a lack of location specific procedures and techniques in restoration for such sites. Government agencies lack experience in this regard. All the sites are repaired or renovated with only the technique and style of well known sites of historical cities such as Jaipur. This has resulted in a single colour and material used without regard to original local grandeur of the site. Also, budget allocations do not prioritise these historical sites which then do not get their due share. Further, continued upkeep and maintenance and security needs to be ensured. There is therefore a need to involve not-for-profit agencies and raise awareness to complement Government initiatives.

Acknowledgement

Author is thankful to Mr. Rajypal Sharma, Convener, Indian National Trust for Art and Cultural Heritage, Jhalawar chapter, for encouragement in writing of this paper. Special thanks are due to Mr. Om Prakash Kukki for providing information and photos of the obscure Utrana Fort. I am also grateful to DSWAA for their interest in bringing dry stone construction of South-East Rajasthan to the larger readership of *The Flag Stone*.

References

- 1 Reena, S. 2019, Push to get Mauryan age old walls of Rajgir , UNESCO Heritage Site Hindustan Times, 3 June.,
- 2 Anon. 2018, Art of Drystone Walling, Knowledge and Technique - Intangible Heritage-Culture Sector, UNESCO <https://ich.unesco-org/-/en/retrieved on 19/01/22>.
- 3 McGuiet, T. 2013, Seismic Resistant Features of Machu Picchu. <https://www.epod.usra.edu>.
- 4 Acharya, M.S. 2021, Dry Stone Construction in Rajasthan, The Flag Stone No.52 September, pp.16-18.
- 5 Anon. Hadoti Un-explored Rajasthan, Bundi, Kota, Baran and Jhalawar. Department of Tourism, Government of Rajasthan. pp.87-88.
- 6 Lakshmi Subramanian 2021. Hinglajgarh, Navli Village, Bhanpura Tehsil, Mandsaur District MP. <https://sahasa.in>2021/05/05>hin>.
- 7 Kukki, O.P. 2022, Personal Communication on Utrana Fort, Bundi District.

Letters

Dear Editor

I greatly enjoy *The Flag Stone* and related matters; thank you. As it happens we have a grandson who lives outside Ballarat and a grandson and daughter who live more or less in the Melton environs. This partly explains our interest in dry stone walls.

Through *The Flag Stone* # 38 Feb 2017, I eventually came across *Melton Dry Stone Wall Study Vol. 1 The Report* prepared for the Melton Shire Council in 2011. No doubt you know all about this, but if not you should have a look.

I found the found the history, politics, personalities, and economics of settlement of Western Vic. in the context of types of fencing, quite fascinating. To my surprise the contact person at *The Willows Historic Park*, Melton, had not heard of DSWs let alone the DSW Driving Trail with "interpretative signs" or the "volcanic genesis" statue apparently under her care; I will persist .

In any case the 90 km Driving Trail north & south of Melton is a worthwhile experience but perhaps needs better promotion.

Ian Jackson, Vic

Dear Ian

Within the bounds of the Willows Historic Park is a sculpture, titled "Volcanic Genesis", for which I am the attributed artist(!!!). It was built (if I recall correctly) by David Long and Alistair Tune and, along with several interpretive panels, tells the history of DSWs in the Melton area. Amazing that a Council employee who works there is ignorant of it, as it is near the entrance to the Park and serves as the starting point for the local driving trail of DSW examples. The sculpture and driving trail (brochure and signposts) were parts of the Melton DSW Study that Raelene Marshall, David Moloney and I prepared.

Jim Holdsworth

In *TFS* #54 readers Tracey & Peter Bishop sought suggestions about their historic slate flagstone wall.



Heritage architect and former DSWAA Vice-president Allan Willingham advises: 'Touch the wall lightly'. A more detailed response might be found in John Cox's article 'What to do with an old wall' (*TFS* #30, May 2016).

Who's who in DSWAA

President: Vacant

V Pres: Vacant

Secretary: Stuart Read stuart1962@bigpond.com
enquiries@dswaa.org.au

Treasurer: Bruce Munday bruce.m42@bigpond.com

Membership: Lyn Allison lynallison4@gmail.com

The Flag Stone Editor: Bruce Munday

0417 895 249 bruce.m42@bigpond.com

Committee Members:

Andrew Garner andezandliza95@gmail.com

Joshua Henderson joshua.d.henderson@gmail.com

Jim Holdsworth jim@planningcollaborative.com.au

Raelene Marshall raelenemar@optusnet.com.au

Membership

Annual membership fee

Single \$30 (\$80 for 3 years)

Couple \$50 (\$130 for 3 years)

Cheque: DSWAA Inc. and posted to DSWAA Membership, 87 Esplanade West, Port Melbourne 3207; **or**

Bank Deposit at any branch of the ANZ Bank **or EFT:** BSB 013 373, Ac. no. 4997 47356

Clearly indicate membership identity of payer

New members

Complete the online membership form on our [website](#): Alternatively email or post name, address, phone number/s, and area of interest (eg waller, farmer, heritage, etc) to the membership secretary (above).

Renewals

Annual fees are due May 31 after the first full year of membership. We send renewal notices prior to this.

Photos

P 1 M Carneiro (l), B Munday (r)

P 2, 3 G Duggan

P 4 K Munday (t), M Carneiro (b)

P 5, 6 M Carneiro

P 7 Micheal Haines Photography

P 8 Brisbane City Council

P 10, 11 R Tufnell

P 12 L Robinson

P 13-17 Madhu Sudan Acharya

P 18 K Munday