Dear Tomas, I enjoyed the article, "Birth of a Bridge". It brought back happy memories of repairing and rebuilding many old bridges around my area in Perthshire, Scotland. One old bridge I remember, the actual foundation was bales of wool. Seems this was quite a common method at one time. The bridge was built around the late 1700's, still standing it was, and much used.

Re slip-form stonework: I remember during my appenticeship thinking I would try out this idea, unbeknownst to my father. After I took down the forms, though it looked not too bad, I was told to demolish it. I did not think my father and grandfather knew so many swear words. Ever since I've stuck to the traditional method of building with stone.

You have some very interesting articles, I especially enjoyed the Brother Book of 1563. My grandfather must have known about this; he was very strict regarding my behavior during my apprenticeship. All the very best and keep up the good work.

Ian Cramb, Bangor PA

VENEEREALITY

Spider-Man may appreciate the opportunity to take a gravity-defying stroll across a vertical flagstone patio, but we mere mortals wonder what would possess someone to ignore the simple wisdom of laying heavy things flat so they do not fall down. Pardon my visceral reaction, but youthful experiments with dozens of garage-sale domino sets left an indelible impression: unless constructing a tower with the prior intent of watching it fall down just for fun, structures made of slab-shaped components are much less likely to spontaneously collapse when said components are stacked flat rather than balanced precariously in any other orientation. Granted, I was using only friction and inertia as mortar to hold the dominoes in place, but the principle is a general one, and even modern theories of structural engineering and the building codes derived from them recognize the fundamental relationship between the ratio of the height of an object to its smallest horizontal dimension and the tendency it has to fall over.

Stone is characterized by its hefty mass, great compressive strength, and proven structural longevity when stacked properly, as well as for its aesthetic appeal. By using it non-structurally in a cyclopean mosaic, the veneer introduces a vertical running joint the entire breadth and height of the wall between the veneer and the wall itself. A thin but massive vertical slab tends to be unstable and more likely to topple if the wall shifts out of plumb, and if too much weight is put upon it, even a small fraction of what the stones can handle compressively, the wall may ripple and buckle enough to begin to lose its stones before it fails.

But the wall stands, holding its facing stones up on edge, at least for now. One can only assume behind its face is hidden some kind of structural network to counteract the visible instability, a web of tensile forces holding tenaciously to those stones balanced so precariously on end. Mortar alone is not adhesive enough, but strands as strong as steel can hold the wall together for a time. Perhaps Spider-Man was involved after all.

David E. Wagner II, San Antonio, TX

On the subject of stone cladding versus solid masonry, why would anyone want to represent one as being better than the other, for any reason?

If a person is going to be completely stuck in the middle ages forsaking all forms of advancement within the craft, they may well want to continue building solid walls. (solid stone masonry: walls built with a 'fair faced' outside skin of stone, and a fair faced inside skin of stone, and filled with loose bits and pieces of stone chips and mortar. Inner and outer faces are integrated at openings and within the body of the wall at regular intervals with 'through stones').

Stone clad walls, on the other hand, are a single skin of fair faced stonework laid up against a backing material which can be concrete or steel, (as in the Empire State Building and it's like), brickwork or timber. All clad buildings allow for an air space between the backing material and the stone allowing moisture to evaporate. This is a good thing.

In the case of building in wet or cold climates, the combination of timber frame clad with masonry has long proven to be the best form of construction. The beauty of a stone house that is properly insulated and has within the building envelope a breathable vapour barrier on the outside of the frame behind the stone and an impermeable vapour barrier on the inside of the frame behind the drywall provides for a comfortable existence for the inhabitants. No moulds or mildews to promote asthma amongst the children, no drafts in the winter, a sound exterior tied to the frame that will age gracefully. What could be better?

It will only stand as long as the frame holds up though so don't expect 'cathedral' longevity!

I can almost hear you muttering Tomas! You are asking how the traditions of the craft can be kept alive in such a structure. Easily! Wisely chosen stone, ledge-rock type material, limestone or sandstone cut with a maximum 5" bed width is a better than granite fieldstone. Although, having said that, we have built many clad buildings out of split then squared boulders with great success).

You can then trim the windows and doors with ashlar sills, jambs and lintels or voussoirs (arch stones). These can be cut from Indiana limestone or Ohio sandstone to accent your stone walls.

NEVER mix sedimentary stones on any building.

Robert Watt, Toronto, Canada

Hello, I am a self-employed stonemason in South Carolina. I am writing this letter as a call to arms to all stonemasons who believe in our craft. Where I live, 90-95% of the stonework being done is manufactured stone or even worse- thin, irregular stones randomly stuck on the wall with no pattern or concern for neatness whatsoever. When this method of adhered veneer is used, there is no way to lay your corners plumb to a string or keep your wall line consistent. Because these stones must be pressed and squeezed against the wall so they will adhere, the face of the wall and corners are in and out as much as 2 to 3 inches. When these so called "stonemasons" have massacred this wall at a rate of 100 square foot per day per man, they just fill all the joints with a grout bag and scratch them with a stick. Most of these workers have never been an apprentice or learned the trade from an experienced stonemason working with them. They are hired by local stoneyards who sell the stone and line up the job. They teach them to make a super rich cement (6 shovels of sand to half a bag of portland cement) and show them how to stick the stone on the wall. "OK, youâre a stonemason now. Go veneer that $500,000 house and call me when you're finished."

This is not happening because of lack of good stone. Winnsboro Blue granite is the state stone of South Carolina and is readily available. But thin veneer masons do not know how to lay it because it is too heavy to stick on the wall. I know this publication is read by serious masons who love this trade who may think I am joking, but believe me I am not exaggerating.

I learned my trade in New Hampshire and spent years of laboring and apprenticed until I got the opportunity to lay stone. Here in South Carolina I have struggled to get work using the traditional methods I was taught because these thin veneer masons have priced their services to compete with stucco and brick. All true stonemasons need to be aware that this is happening everywhere. This method of masonry will affect the livelihood of the qualified stonemason who cares about and takes pride in his/her work. It is up to us as craftsmen to educate consumers and builders about the differences between natural and manufactured stone and self-supporting stonework and thin, stick-on veneers.

Anthony DiLiegro, SC

SLIP-FORM STONEWORK

Hey, Tomas, I liked your potpourri issue. Loved Mr. Underwood's article on slip-form stonework. He has taken the method to a fine art, but is defensive about the slip-form method because he must know the room is full of purists. Yet even the most artistic mason knows, competitive job bidding requires innovation. My observation about slipform stone masonry is that its best use is with those squirty river cobbles that defy tie-wiring. The finish contrast of softly rounded stone and crisp edges slays me. Whatever shaped form can be created in wood can be recreated in rock. Jim's inclusion of two visible details, a Buddha statue and a recessed shelf with projecting sill is excellent. A chunk of wood or hard foam in the casting can be removed later to create the negative space for embellishments such as these. I look forward to Jim's elaboration of this method. Let me just say, in case he doesn't touch on the casting of smooth cobbles, that a viscous, lime-heavy mortar can be used with cobbles for a more plastic initial set that aids in green striking and washing (and even the occasional need to insert a small rock) after the form is gone. The absence of crags on the cobbles means cleanup is easier and neater than with coarse rock. As far as forming goes, thin plywood can enable the building of radiused work. Sono tube sections, flower pots; any brace-able, found object can guide the formwork. When forming over a toothy substructure, it is possible, even, to build from the top down by applying temporary supports beneath each lift until initial set is realized. Scary, but possible.

Where the costs of supplying the world's most abundant resource alone are prohibitive. The need to use "the local stone" has caused us to explore methods like slip-forming river cob-

bles or mounting rocks on edge instead of on bed to get more economical coverage. We could never do it without mortar. Another response to material and labor cost is to use phony stone, but that's a subject that makes me cranky. I am particularly intrigued by the on-point and herring-bone drystack walls and would love to see more of them in your outstanding photo gallery.

Todd Campbell, Utah

UNCLASSIFIED

Tomas, in the article "The Wrong Stone" in the inaugural edition of STONEXUS the author talks about the original stone used for the Houses of Parliament and how in 1860 it was described by Charles Dickens as "...being the worst ever used in the capital." Today "50 % of the visible masonry has been replaced during the last 130 years" with Clipsham stone.

The question arises in preservation: when should you change from the original material to a new replacement material. The houses of Parliament is a relatively new structure and the historical need to be accurate is perhaps less intense. However Wells Cathedral, England, had a similar problem but with a much older building. It was known over a hundred years ago that Doulting stone was not an ideal building material but it has been used for the Cathedral for hundreds of years. So to over come the problem of a poor quality material but not lose the historical connection to the local stone it was decided to use Clipsham stone (a much harder and durable material) in the areas which received most weathering but to continue to useDoulting stone for the majority of the building.

So sometimes the wrong stone can be the right stone. At least it keeps the stone mason busy.

Simeon Warren, Charleston SC

Tomas, I am the State Park Superintendent at Stonewall Jackson Lake State Park in West Virginia. The park is only 12 years old. During that time we have been developing the various facilities. Recently we started our trails construction project. A few years ago I discovered some dry stone walls in an area that I wanted to put a trail. Since that time I have discovered more walling in and around the park. Now I am looking for history and information about the walls. Can you help me? I can describe these more or send digital photos if you are interested.

Sam England, WV

Sam, Tomas asked me to reply to your query to him, figuring that as I live nearby more or less I might know more about your walls. I don't think he is right, but I will hazard some words on it. I live in Franklin, Pendleton County by the way, on Rt.33 which would put me just down (though a long way down) the road from you. I don't know anything about your walls over there; but two good sources of help would be the WV Dept. of Culture & History which has large archives and lots of pictures, and your county surveyor along with the deed that almost certainly accompanied the establishment of your state park. The latter will define who settled what when and also define old boundary lines. Defining fields and property boundaries was a common reason for putting walls where they went. I have lived and worked in quite a variety of places near stone walls and thought about why they are found in some farming areas and not in others. Here in Pendleton, for example, there are almost no stone walls anywhere; the few instances really stand out. Stone foundations, stone chimneys and stone dumps at the edges of fields, but almost no walls. I think it goes back to early settlement and agriculture patterns here. The flat valleys were cleared and farmed by the English and the rock littering their fields was river-rounded and hard to build with. They tossed it into the river, or into stone dumps at the edge of a hill where you see it still; easier to split rails and build boundary fence that way. The second settlement wave here was the Scotch Irish who settled the steeper hillsides (the flat valley land already taken); they were herdsmen, not "dirt farmers" and didn't need to clear rock except for small gardens and an occasional field. Again they used stone dumps when they did clear because their stock ranged all over and could hop low stone walls easily - easier again to build with split rail. Remember, these folk often had no wagon, or if they did the work was very hard on both body and equipment.

In the early Appalachian settlement the population density was relatively low, so there was less need to develop land intensively. Move down river to Round Hill, VA, to the mountain just north-west of there and you will find stone walls 4-5 feet high and as much as 12 feet wide, and still bedrock showing frequently in the now overgrown fields. People were desperate for any land at all. This was pasture (it is not plowable) and the literally "dirt poor" herdsmen had nothing but scrub forest, so no rail material. They built stone walls to hold sheep, cattle and horses, often, it seems, along roadways. The rock there is also more angular than here in Pendleton's valleys, so easier to lay up. This desperation for land and intensity of use is more akin to the New England situation, though New England rock is often more like ours and hard to lay up.

A recent book, Stone By Stone by Thorson (www.sciencsnewsbooks.org), covers New England stone walls in depth. I have not been able to afford it; but the review refers to these walls being "primarily linear landfills" and claims that they were "the biggest investment (I assume he means time investment) in a farm, often exceeding that of land and buildings". This squares with my experience. Settlers did not build stone walls on a whim, only when they had to. I don't know where this leaves you in your quest, but I hope this reflection helps. One last thought - the only old stone walls I know of here in Pendleton were built as corrals and were next to little cliffs of very angular rock.

Jim Underwood, WV

On the subject of rural walls: when I was hanging out in North Carolina some time back, I noticed these long walls running back into the forest. As they weren't enclosing anything I assumed they were boundary walls. "Not so," I was told, "them's hawg walls." Farmers would put pigs out to forage in the woods. Mast, that is to say acorns, was a staple of the pigs diet, but this made the meat somewhat bitter. Pigs are notoriously hard to catch, so as many people as could be mustered would spread out and they drove the pigs against the walls and herded them towards the farm into a holding area where they would be fed corn to "sweeten them up for slaughter". T. L.

Dear Sir, I am a young Architect in Michigan and a few years ago purchased a home that was built in the 1870's. I am enjoying restoring the house and recently have needed to rebuild some portions of the stone foundation that had been removed or damaged over the years. It has truly made me appreciate and love stonework and left me almost dissappointed when I was finished that there was nothing more to do. I have a very typical stone basement from the time period and would like to make the space usable as a studio for myself. The site has mostly clay soils to the bottom of the basement and then it is clay sand mix on to the water table a few feet below. I have spent the last couple years correcting gutters and rebuilding window well/drywell systems to drain the water away from the foundation as much as possible. As a last line of defense I was hoping to be able to waterproof the inside of the foundation to prevent any stray infiltration. I was thinking of tuckpointing all the stone again since the original mortar has mostly fallen to the floor. I know with stone this will become a maintence issue as it will always continue to crack. I was hoping then to seal/waterproof the walls. I have looked at the Dry-lok product and they do not recommend the product for stone. I was also hoping to use a clear finish to allow the natural beauty of the wall to show through. I was wondering if there was any product or system you could recommend. Thank you for your help.

Tim McCotter, MI

The issue is terrific! I just got STONEXUS II today and am poring over the good things to come as I savor the articles and photos. I do want to respond to Pat's challenge of a competition for the best description of a useful masonry technique. A great idea, and I want to nominate Pat himself. The chapter entitled Pointing in STONE BUILDINGS is by far the clearest, most sensible and most useful description of the technique that I know. Whenever I am asked about re-pointing I refer people to Pat's chapters on lime and on re-pointing. Hands down, the winner already. Now all we have to do is come up with another prize. The next time we get in conversation, Tomas, I will have to tangle with you on the materials of the Hakka houses in Funkian. To my knowledge, the majority of them are of earthen material, but I am very interested to know that some are made of stone. Thanks again for the great issue of STONEXUS,

Mac Watson, Santa Fe NM

Bonjour collegue tailleur de pierre.

I was a bit impatient to get your magazine, that`s right. But I finally got it yesterday, and I am absolutely delighted to read it. And without any doubt and regret I will become one of your member. Our profession need a foundation like your! Stone have been my passion for 12 years now, and a fascinating reason to travel in country like India , Israel, Egypt, Syria, ukraine, and

mainly Europe. And I found out whatever the country, the politics, the language, the culture, stonemasons always find each other, sharing the same passion and interest!!!

So I said thank you for showing the beauty of this wonderful worldspread material, STONE, And BRAVO. PORTEZ-VOUS BIEN, ET TRAVAILLEZ-BIEN (keep well and keep up the good work).

Vincent LeMacon, France

p.s. Le Macon (pronounced mah-son) means the mason. Really it's my name, but my father and his father was woodworkers, I'm making it true again. I wish I could write a much better english, to be able to share my experience and feeling about stone.

Tomas, What a great magazine...and great format. Congratulations. And thanks for considering me with my Stonemason's Journal piece. Years ago there was a great spiritual mag called Gnosis (the one called Gnosis today is a mere shadow of its former self). It had in -depth articles, poetry, zen, stories of true transformations. and arcane mystery. Its challenge as always was to keep things fresh and interesting; it did so though often at a financial loss. It was always a little high-brow in an enlightened way, the kind of magazine you discovered your most favorite professor was reading and therefore you had to have it. It was obscure and not everyone could get it but that led to its success. But that was then and publishing and marketplace is most different now. My take is that you want both high standards and broad appeal and I'm sure mass market is what your advertisers want. And to do that you need to compete with the garden mags or Stone World or Slippery Rock Gazette (that has a great penny pincher tool and employment section for the counter top trade). The problem is when you go down that road you begin to publish stories that are really advertisements, as both Stone World and Slippery Rock do.

Stonework as a trade is, and has always been, sundry and pedestrian. The working class of Britain and Europe found pride in what they could achieve in their guilds, but it was always (with the exception of great sculptors and carvers) bound by class. This was so only until a few years ago; it was really America that began to make crafts from boat building to tin knocking sexy and uncommon. Skilled masons from Europe and China could come here on tourist visas and be paid a years salary in a few months plus be lauded as kings. Technology of course has changed things a lot; the banker mason system (where I learned) was of the shop guild system and the yearly advancement depended on what was done by hand tools. Now you can teach a student to cut a straight line with finished kerf in one day on granite with a diamond saw in what it took months of practice to learn and make perfect by hand. It's not exceptional to hear journeyman masons talk of their work and know that little but the setting was done by hand. This is not boasting, but for the first 6 months of my training I was not allowed to use any electricity at all; today that would be not be considered practicable. What is lost I fear is true knowledge of the material, how it breaks and where it gives. This is an intimacy that stone masons have, or had, with their craft. Mortar making is the same thing . The alchemy of historic mortars is a wondrous craft; the burning of the oyster shells, chalk and limerock; the selection of sands; the making of coarse stuff; the secret additives (marble dust, hair, ox blood, green grass for color, dung); the uses of hydraulic and non hydraulic lime in setting; manufacture of home grown lime paints and waterproofing with natural materials. The fat sticky mortars and putties have a far superior range for setting than the best bag of 25$ white Portland We have to make a living, but you must live your heritage before you claim it as your own. I was once asked if I was a master mason; I quickly responded that a master mason is one who, if they lived long enough could build a cathedral by himself. I'm not there yet, but I have met some who are. Best to you and the magazine

Michael Drummond Davidson, Alabama

Michael, thanks for your encouraging letter. I'm glad that you—and so many others—appreciate the content–and character—of STONEXUS. As I had no way initially of knowing what the response would be to such a wide range of "material," I'm gratified to learn that folks have a lively interest in other aspects of stone, stonework and stone art than the ones in which they are involved.

STONEXUS is still evolving, finding its identity–and improving, I hope—but I doubt it will ever have much presence in the "mass market". It's an in-house publication and is likely to remain so for some time. At present advertisements are a way for stone suppliers and tool manufacturers to support what they see as a worthy enterprise and one that could have a positive effect on the craft—and the industry. Given the magazine's modest distribution I doubt that they expect much in the way of direct returns.

I have been told that STONEXUS is quite "professional." I've also been told it should be more professional. Frankly I will settle for it being a quality semi-professional publication. This is appropriate, I believe, for an in-house publication in which, except for the reprinted material, the articles are not written by professional writers, and many of the interesting photographs sent in are not of professional quality. So be it.

BACK TO TABLE OF CONTENTS

STONE FOUNDATION HOME PAGE