

THE HOT IRON SPARKLE

* Newsletter of the North Carolina ABANA Affiliate *

www.ncabana.org
Volume 32 Number 1



First Quarter 2013



Nathan Blank (left) and Bill Brown (right) forging veins in a large abstract leaf on the Nazel 5B

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A Message from Our President

Greetings and Salutations:

2nd Feb 2013

Millers, Creek, NC

The report from Gobbler's Knob was overcast so Phil didn't see his shadow which confirms the signs in this part of the world of an early spring. Worked my brambles yesterday afternoon, with another three trips to the briar patch and a half day in the blueberries yet to go, just to keep up.



Thanks to Cindy Alexander for holding the reins of this organization in preparation for this time of transition. Subsuming the office of president I have found great solace in the elected officers (Garret Dunn, VP - Jennifer Phillips, SEC - Jim Kennady, TRES) and feel confident that, working together as an executive committee, we have the strength and desire to lead NCABANA. FYI, I am the reigning World Champion Whimmy Diddler and I know how to gee and haw.

Your board of trustees held a work session January 19th at Steve Barringer's shop to plot and plan and after four and a half hours, including a working lunch, established a workable distribution of responsibility for operating this organization. Please see the accompanying report. There are a few areas of opportunity for members to volunteer for positions that need filling and recruiting has begun.

The position of newsletter editor has been changed. Thanks to Doug Wilson for stepping up and taking over responsibility for *The Hot Iron Sparkle*. Jennifer Phillips will be collecting and editing images of member's work. Thank you Randy Stoltz for your contributions as editor. We anticipate many more of your excellent articles in 2013.

I look forward to seeing all of you at the Q1 meeting at Big Blu 16MAR13. There will be a short business meeting following the demonstrations. Safe travels, keep swinging for the center of the anvil and for this, I remain, Lyle Wheeler, President, NCABANA.

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Board Retreat

The Board of directors was graciously hosted by Steve Barringer on 19JAN13 for a working retreat. The meeting went very well with significant contributions from all in attendance. A redistribution of the workload was accomplished and I feel very confident that we have the ability to guide NCABANA forward.

The executive committee of the board of directors will take action on time sensitive matters between board meetings dependent upon board review and approval. Board meetings will be scheduled at the conclusion of the demonstrations at Quarterly meeting, as necessary.

Being the tie that binds, responsibility for the newsletter will transition to Doug Wilson, Jennifer Phillips in charge of collecting and editing member images. All submissions, news and reviews will now go to Doug. Member's photos of their work and captions in 25 words or less will go to Jennifer. Doug has established a publication calendar for the remainder of the year, so please keep your submissions current. We are also trying to determine the feasibility and desire to distribute the HIS electronically.



The website was discussed and the position of webmaster needs to be addressed. Please contact any board member if you have the desire and ability to take on that task.

The Scholarship Committee will now come under the purview of the vice president. Garret Dunn is currently reviewing the application procedure, selection process, distribution and performance criteria and will report in the Q2 newsletter.

The by-laws are being reviewed by Jim Kennady and myself as an ongoing project with progress being made for clarity and function.

NCABANA will be represented at Fire on the Mountain 27APR13 in Spruce Pine, NC. This will be an

opportunity to recruit new members and support this festival.

Efforts are being made to work with master blacksmith Jerry Darnell to publish his teaching notes. This project is in the beginning phase and will be an opportunity to support a much-needed book.

John Mathews is working on criteria for student groups to join NCABANA in a special membership classification. His recommendations will be reviewed and approved so that we may expand our rolls in that direction.

There was considerable discussion of NCABANA hosting a regional blacksmithing conference. A consensus was not reached but the realization that a significant amount of work is entailed to host a conference and that this would not occur without sufficient involvement from the membership.

I came away from the work retreat satisfied that by working together, the board of trustees can lead this organization forward successfully.

Respectfully submitted, Lyle Wheeler, President, NCABANA

Secretary's Report



4th Quarter 2012 Secretary's Report

The business meeting of the NC ABANA chapter was held at the fourth quarter chapter meeting at Philip Gaddy's shop in Mooresville, NC on December 1st, 2012. The meeting was led by President Cindy Alexander.

No election ballots were needed for the positions of president and treasurer with only one nomination per position. Lyle Wheeler will be the new NCABANA president starting on January 1st, 2013 serving a two-year term. Jim Kennady will continue as treasurer for another two-year term.

Bob Timberlake recognizes Cindy Alexander for her over twenty years of contribution to NCABANA with the presentation of a Damascus hammer in an ornamental wooden box.

See the Events Calendar inside the back for dates of the quarterly meetings.

- Jennifer Phillips

Submissions to the HOT IRON SPARKLE can be made to:

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NC ABANA Board First Quarter Actions and Outcomes

On January 19th, 2013 the board of directors for NCABANA held a quorum to discuss business for 2013. Board members present included Lyle Wheeler (President), Garret Dunn (Vice President), Jennifer Phillips (Secretary), Jim Kennady (Treasurer), Marshall Swearingen (Triad Area Blacksmith Chapter Leader), Steve Barringer (Southern Foothills Blacksmith Leader), John Matthews (Blue Ridge Blacksmiths Leader), Teresa (Secretary for John Matthews), and Doug Wilson (Editor for Newsletter).

Motions were as follows:

1. Jim Kennady makes a motion for NCABANA to pay for use of the State Fair grounds for 2013 and to pay for the organization's insurance for 2013. Marshall Swearingen seconds the motion. Lyle Wheeler calls for a vote. Motion is passed unanimously.
2. Garrett Dunn makes a motion to buy a pen drive for the secretary's position as a backup for member information and other NCABANA archives. Marshall Swearingen seconds the motion. Lyle Wheeler calls for a vote and the motion is passed unanimously.
3. Marshall Swearingen makes a motion for NCABANA to buy a vinyl banner (approximately \$150) for the tent that NCABANA is going to set up at Fire on the Mountain 2013 in Spruce Pine, NC as a way to boost membership. John Matthews seconds the motion. Lyle Wheeler calls for a vote. The motion is passed unanimously.

Other business included planning the quarterly meetings for 2013, reviewing the treasurer's reports, discussing expenses & reimbursement, increasing "Hot Iron Sparkle" production, updating the website, and organizing NCABANA's role in upcoming events.

If you would like more information about the board meeting or a copy of the board meeting minutes, please email Jennifer Phillips the secretary for NCABANA at northcarolina.abana@gmail.com.

Note from *The Hot Iron Sparkle* Editor

Welcome to the first edition of *The Hot Iron Sparkle* for 2013. With this issue, you will notice a change. Doug Wilson has taken over as editor from Randy Stoltz for *The Hot Iron Sparkle*. This first issue is a joint effort with Randy as he has helped me through the process of putting together the newsletter. Many thanks to Randy for all he has contributed. I look forward to his continued contribution in 2013 as head of the Triangle Guild and through his excellent how-to articles.

I invite you to join Randy, Ray Clontz, Robert Silver, Jim Kennady, Greg Price and Robert Timberlake who are published in this issue by contributing your stories and ideas for publication. Do you have a shop hint, an event report, a bit of history or a technique that you can teach others? Please contact me for help in telling your story or send me your materials. Your fellow blacksmiths of North Carolina will appreciate your effort and contribution.

Please mail any of your input to

Doug Wilson ncabana@ironalchemy.com

2012 Treasurer's Report



The financial summary for 2012 is provided below. The members were quite generous with Iron-in-the-Hat donations. We raised a total of \$1,780 for the Scholarship fund. Five scholarships we awarded in 2012 with a total expense of \$1480. The income and expenses of the organization are presented to allow everyone to review the current financial status. I would like to encourage all member to consider asking at least one person to join as a new member or give the gift of membership to someone you know or a local library. This will generate additional income for the organization and support others learning more about blacksmithing. As you know, NCABANA is a 501(c)3 non-profit organization and contributions to NCABANA can be tax deductible. If you or someone you know would like to donate to NCABANA please let me know. Any donations will go to benefit the art, education and history of blacksmithing. (For more on tax deductible donations see: <http://www.irs.gov/pub/irs-pdf/p1771.pdf>) If you have any question, comments or concerns please let me know.

jimkennady@gmail.com

Financial Summary 2012

Checking Account	2012	2011
	Net	Net
Dues	\$4,950	\$5,950
Heritage Forge at NC State Fair	\$1,600	\$918
Newsletter Printing and Postage*	\$(970)	\$(4,120)
Newsletter Editor Fee*	\$(300)	\$(1,200)
Insurance	\$(1,180)	\$(425)
State Wide Quaterly Meetings	\$(480)	\$(642)
Other	\$740	\$(1,051)
Total*	\$4,300	\$(145)
Balance 31-Dec-2012	\$10,972	

*Reflects one 2012 newsletter

Scholarship Account	2012	2011
	Net	Net
Summary	\$380	\$814
Balance 31-Dec-2012	\$4,831	

In Memorium – Stuart Willis

With great sadness, I write that a great friend and fellow blacksmith Stuart Willis passed away Thursday, Jan 24th from heart failure. Stuart was the guy who got me into smithing probably 15 yrs ago. Stuart was very traditional and was very knowledgeable about techniques, tools and anything about the trade. He and I also built the first 2 tirehammers from a rough drawing by friend Ray Clontz and also a couple treadle hammers. As you know Clay Spencer made a new career doing tire-hammer workshops. Stuart and I got into making tomahawks and that is what both of us were doing the last few yrs. A great loss to the blacksmithing community...Robert Silver

New Members for 2012

Albert Ronnie NiFong	Winston-Salem	NC	Norm Bedwell	Willow Spring	NC
Andrew & Dylan James	Mocksville	NC	Rick Morrison	Apex	NC
Avery Pierce	Harmony	NC	Robert Seevers	Morganton	NC
Bob Howe & Ann Renegar	Raleigh	NC	Scott Mundorf	Charlotte	NC
Braden Ogle	Clayton	NC	Sean Beaton	Pittsboro	NC
C. W. Woody Slades	Edenton	NC	Shamba Wright	Todd	NC
Carry Croghan	Chapel Hill	NC	Steve Frey	Apex	NC
Charles E. Roberts	Midland	NC	Subal Das	Raleigh	NC
Chris Abernathy	Chapel Hill	NC	Tim Carroll	Clayton	NC
Chris Gitthens	Fuquay Varina	NC	Trevor & Joel Foster	Denton	NC
Dan Moore	Raleigh	NC	Wayne Dixon	Castle Hayne	NC
David A. Tosi	Pfafftown	NC			
David Clement	Pittsboro	NC			
David S. Pardue	Mocksville	NC			
Doug Galloway	Lenoir	NC			
Doug Wilson	Pittsboro	NC			
Ellen Ball	Hickory	NC			
Erika Price	Garner	NC			
Gil Aybar, Jr.	Fort Bragg	NC			
GW Kearney II	Hamptonville	NC			
Jackson Crawley	Marion	NC			
James Jones	Boone	NC			
Jason A. Lonon	Marion	NC			
Jeffrey Mills	Garner	NC			
Jody J. Wetta, Jr.	Stanfield	NC			
John Cappelletti	Pittsboro	NC			
John Matthews	Weaverville	NC			
Kendall Hobson	Murphy	NC			
Kevin Riddle	Eagle Rock	VA			
Mack Holman	Lincolnton	NC			
Matthew L. Cauthren	Kernersville	NC			
Micah Dowdy	Pinnacle	NC			
Michael Kelly	Wilmington	NC			
Nick Eddy	Trenton	NC			



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This year's Forging on the River blacksmithing conference will host internationally recognized demonstrator and tool maker, Brent Bailey. Scheduled workshops and demonstrations will take place April 5th-7th at the Metal Museum.

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Regional Reports

October meeting of the Southern Foothills Blacksmiths

Story and photos by Ray Clontz

The meeting was held at Steve Barringer's shop in Mooresville NC the second Sunday in October (always the 2nd Sunday). As I have noted before, our meetings consist of members doing their own projects with help from other members who are knowledgeable about the items being made. There are always many interesting projects being worked on. When the meeting started, Tyler Rashe said he had a project, but was not sure of the design he wanted to do. After much head scratching and many sketches on the welding table, Tyler had a design for the period fireplace crane he wanted to make for a friends period house. The crane with a forged hook and separate mounting plate with upset ends with drifted holes for 5/8 diameter pivot pin was completed in the afternoon. It turned out really nice and I am sure the friends are thrilled to receive it.



A crane assembly

We usually have 15 to 20 members at our meetings and are very fortunate to be able to work in Steve's shop that has enough room and equipment for all members to be able to work on their projects. Thanks again Steve.



A fish puzzle that was being made.



Avery Pierce forging an Axe. Avery makes some really nice axes



Brian Swink and Fred Connell making the Guard for a Civil War style D-Guard knife on a bending fixture that I brought that I use in my shop.



Our youngest member, Houston Finley, making a knife. Houston forges at every meeting and makes some really nice items, such as knives and letter openers.

All members look forward to each meeting not only to be able to work in such a nice shop, but just to get together with all our friends who share such an interesting hobby. Members share their knowledge in areas such as design, tooling, forging, machining, welding, knife-making, heat-treating, material selection, sources, etc.

Triangle Blacksmith's Guild

Story Randy Stoltz; photos by Marty Lyon

The August 2012 meeting of the Triangle area blacksmiths met at Jim Kruger's shop in Pittsboro, NC. With many of the members present being new to blacksmithing and just starting out, we changed the planned agenda to focus on the basics. Al Andrews demonstrated drawing, bending, and upsetting to the new members.



Following Al's getting started with blacksmithing demonstration, I demonstrated how to make simple candleholder from a single piece of 3/16 round stock by coiling the round stock around itself to form the base.



After the candle holder demonstration it was open forging for the rest of the day with many of the new members staying late into the afternoon.

The October meeting was held at Heritage Forge at the North Carolina State Fairgrounds. As the shop was already pretty much set up to go, we only had to unpack some tools and fire up the forge. The focus on this meeting was demonstrating at the state fair, and safety when demonstrating.



Controlled Hand Forging: Tongs (Reprinted with permission from [Hammer's Blow](#))

Lesson 22 - Forging the Jaws

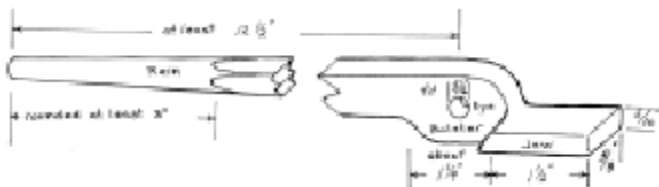
Text By Jay Close

Photos by Jane Guilden and Jay Close

Drawings by Tom Latané

Introduction: There are many tong forms serving myriad functions, and there are diverse approaches to this common tool. Some smiths collect tongs in profusion; others get by with a small number. Some like alloy steel for tongs; others find mild steel adequate. The tongs discussed here are basic, forged from mild steel and, except for those used in punching, these tongs can be made without the use of tongs.

Intent: The lesson is designed to familiarize the learner with the basics of tong forging. The student will practice basic forging operations including drawing down, hot punching, drifting, shouldering, rounding, cutting and upsetting. These operations come together forging a set of flat jaw tongs using 5/8 inch square bar and drawing down the reins. Drawing 1 illustrates one side of the tongs discussed here. Dimensions and the terms used for the major parts of the tongs are included.



Drawing 1.

Material: 5/8 inch square mild steel at least 24 inches long.

5/16 inch round mild steel for the rivet.

Tools: Basic forging tools including a hot punch and drift to make a 5/16 inch diameter hole; a post vise will be useful but is not a necessity; layout tools including a rule, dividers and center-punch.

Procedural Overview: Each half of the tong is forged identically; there is no left and right jaw.

To create the jaws and pivot bolster, three, one - sided shoulders are forged on the rounded edges of the anvil. Become confident with these three shoulders, their order and where on the anvil they are forged before proceeding. There is no time to puzzle over where to hit. Rehearse these shoulders in the workshop between your ears.

Photos 1 through 5 show the shoulders that start the tongs. You will review these photos later in the lesson too.

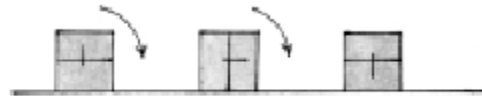
Hint: For a learner without an experienced coach, it may be wise is go through the procedure with an appropriately sized "bar" of

modeling clay.

Shoulder One— made on the near rounded edge of the anvil.

Step in the bar about one half of its thickness the full amount of the stock lying on the anvil. Address sideways spread keeping the jaw the same width as the parent bar. (Photos 1 and 2).

Shoulder Two— made on the far rounded edge of the anvil after tumbling or rotating the bar 90 degrees to the left. That is rotate



Drawing 2- Tumbling a bar around its long axis, as viewed from the free end of the bar. The rotation would be to the smith's left.

the bar around its long axis so the adjacent face of the bar is positioned uppermost. Drawing 2 illustrates the idea.

This shoulder comes at the base of the first one. Many smiths will also slightly angle the bar at about 30 degrees off perpendicular to the axis of the anvil. Here you want sideways spread. Again, reduce the bar thickness by about half. See Photos 3, 4 and 5.

Shoulder Three— also made on the far rounded edge of the anvil after another left hand turn or tumble of 90 degrees. Photo 6.

This shoulder defines the pivot bolster and the start of the reins. After the jaws are forged and the pivot bolster defined, a pivot hole is hot punched and drifted.

The reins are drawn out using the anvil horn and the reins are smoothed on the anvil face.

The two tong halves are riveted together. Once assembled, they are sized to fit a specific bar thickness.

Note: directions assume a right handed smith forging tongs used principally in the left hand. Tongs for a left handed smith that will be held primarily in the right hand are sometimes made with 90 degree tumbling to the right. The slight offset in the handles to the left or to the right seem to better conform to the anatomy of the left or right hand. Many smiths do not bother with the distinction or bend the reins in vertical alignment creating a neutral grip

Step One (layout):

Cut a length of 5/8 inch square mild steel a minimum of 24 inches long. This will provide sufficient length to forge both halves of the tongs without use of tongs.

Put two centerpunch marks (or some other permanent layout mark) on the bar. The first should be 5 and 1/2 inches from the end of the bar and the second should be 11 inches from the end.

See Photo 7 for the layout. These marks indicate the material for each tong half.

A layout easily seen when the bar is at heat can be made by placing a deep centerpunch mark very near the edge of the bar. If the mark is near enough to the edge, the steel bulges out from the bar looking like the bulging eye of a frog. Prominent "frog's eye" layout marks save precious time lost searching for more subtle indicators.

Step Two (first shoulder):

The student should review previous lessons on shouldering at the near and far edges of the anvil using half faced hammer blows.

Heat the end of the bar to a yellow and place 1 inch of it on the anvil face at the near rounded edge of the anvil. Hold it horizontal and perpendicular to the edge of the anvil as in Photo 8.



Photo 8.

Hint: if you need, place a chalk or soap stone mark on the anvil so you can readily repeat the over lap. With practice such an aid will not be necessary.

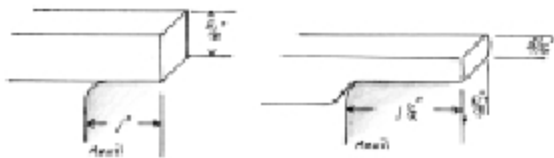
With half face hammer blows sink a vertical shoulder reducing



Photos 1 and 2.

the thickness of the bar by about half all the way to the end of the bar. You want a parallel sided extension that will become the tong jaw.

Eliminate sideways spread, keeping the bar 5/8 inch wide as you forge. See Photos 1 and 2.

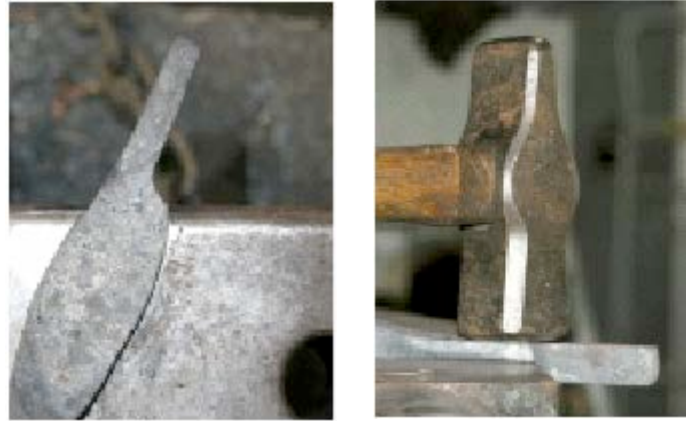


Drawing 3- The first shoulder, made on the near edge of the anvil, to form the jaw.

The higher the heat and the harder you hit the more readily this shoulder will develop.

Drawing 3 shows the needed result with approximate dimensions.

Target: This shoulder is readily forged in one heat. With practice you may be able to forge more than one shoulder on the same



Photos 3 and 4.



Photos 5.

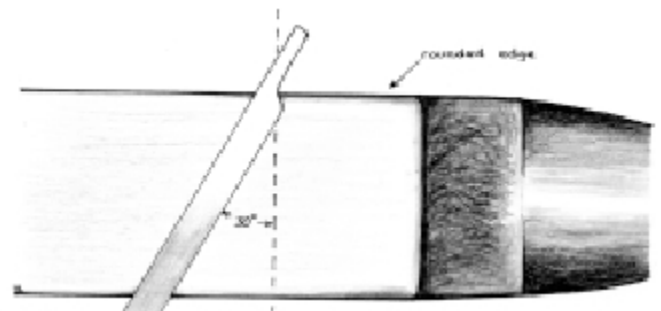
heat, but it is critical to set shoulders at the highest possible temperature. Do not extend a heat attempting to do more than the temperature allows.

As the bar drops to orange temperature, get it back in the fire.

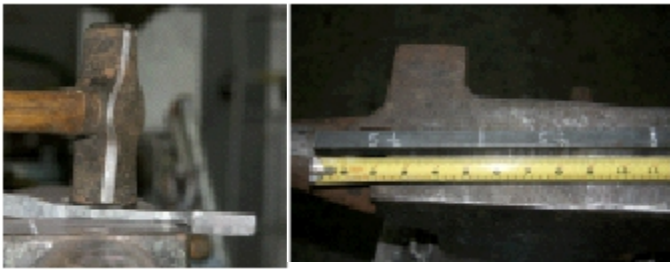
Step Three (second shoulder):

The second shoulder is made by tumbling or rotating the bar 90 degrees to the left and repositioning it on the anvil. See Photos 3, 4 and 5.

Place all of the drawn down portion of the first shoulder extend-



Drawing 4- The second shoulder, made on the far edge of the anvil, to form the bolster. The 30-degree angle forms a slightly stronger transition between the jaw and bolster..



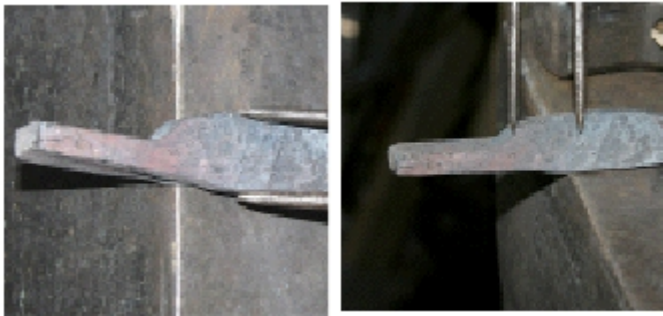
Photos 6 and 7.

ing off the far side of the anvil so the base of the shoulder aligns with the far rounded edge. Keep the bar flat on the anvil face. Drawing 4 shows the positioning of the bar for the second shoulder. Note that the bar is swung about 30 degrees to the left. This makes the joint a bit more refined. It is permissible to simply hold the bar straight across the anvil.

At a yellow heat, hit flat, half-faced hammer blows.

Thin the bar to about half of its starting thickness and create symmetrical sideways spread. You ought to be able to get 1 inch of spread and about 5/16 inch thickness. Photo 5 shows the result.

Work this reduced thickness down the length of the bar for about 2 inches. This gives a head start in drawing the reins. See Photo 6.



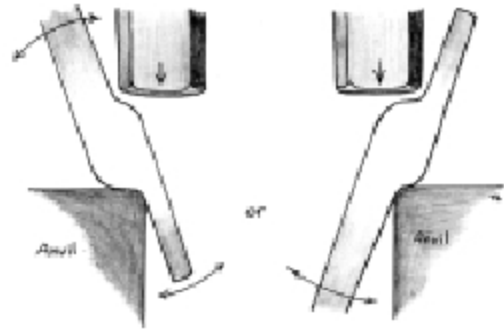
Photos 9 and 10.

Forging dynamics— because this spreading and shouldering is accomplished entirely from one side of the bar, the spread in cross section can be expected to be slightly wider on the top than the bottom. This is evidence of the differential impact of the hammer blow as opposed to the anvil on the hot bar. The harder you hit and the hotter the temperature, the less this asymmetry develops.

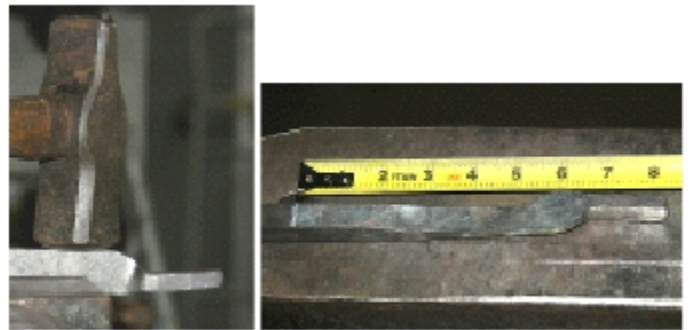
Step Four (third shoulder):

The third shoulder requires another tumble of the bar 90 degrees to the left. This orients the flat you made in Step Three vertically.

If you spread the bar to one inch in width when making the second shoulder, you now want to place that same amount of the spread bar extending off the anvil. Compare Photo 9 and Photo



Drawing 5- Dressing the shoulders, which defines the bolster.



Photos 11 and 12.

10. These photos show use of dividers to compare dimensions for explanatory purposes; in forging make this an eye judgement. At a yellow heat, hit hard, half face blows to forge the third shoulder. Be sure you are using the rounded edge of the anvil. See Photo 11.

Control the bar dimensions. Define the pivot bolster and begin to draw the start of the reins. At this point retain the 5/8 inch width of the bar but reduce the thickness to match that of the bolster.

Your results should look like Photo 12.

Hint: After the third shoulder is established use the horn of the anvil as much as possible to do all subsequent drawing out of the reins. The rounded form will greatly enhance the stretching effect of your hammer blows and speed the work significantly.

You can refine the bolster shape by working it on the anvil as shown in Drawing 5. You can even selectively cool one edge to retain its form while the opposite side is altered. You want a symmetrical “football” or lozenge shape to the bolster area.

Often the transitions between the first shoulder and the second when forged on the rounded edges of the anvil will develop a “web.” The transitions will not be crisp and angular, but will flow into each other reflecting the curve of the anvil edge. Attempting to forge this web away will often result in a cold shut, so it is preferable to leave it for now and do a bit of file clean up as necessary prior to final assembly.



Photos 13 and 14.

Step Five (punching):

Review previous lessons on punches and hot punching.

The most efficient forging procedure is one in which each section is completed before moving to the next. This avoids reheating areas that have been left incomplete after they are cool.

While some smiths will reheat and punch the pivot hole after the rest of the tongs are done, efficiency dictates that now is the time to punch the pivot hole. With care drawing the reins, there

should be little or no distortion of a hole punched at this stage.

Punch the center of the bolster using a hot punch about 1/4-inch diameter on the end.

Remember to start punching from the outside of the joint with the jaw off the anvil at the far rounded edge. See Photo 13. When you flip the work 180 degrees to complete the hole and then move to the pritchel hole or punching block to free the slug or “biscuit,” the flat outside of the joint will lie flat on the anvil face. See Photo 14.

Drift the hole to 5/16 inch diameter.

Target:

Punch and drift the hole in a single heat. The hole should be centered in the mass of the pivot bolster.

This lesson is concluded in the next issue with Controlled Hand Forging Lesson 22B, “Drawing The Reins.”

Acknowledgments: Photos by the author and by Jane Gulden.

Thanks to the American College of the Building Arts (www.buildingartscollege.us) for encouragement writing this lesson.

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Lesson 22B – Drawing the Reins, Assembly And Adjustment

Text By Jay Close

Photos by Jane Guilden and Jay Close

Drawings by Tom Latané

Lesson 22B- Drawing the Reins, Assembly, and Adjustment

Step Six (drawing the reins):

There will be about 2 inches or 2 and half inches of unworked bar left before the layout mark you made in Step One. Photo 15 shows the bar, the forged jaw and pivot bolster with punched hole along with the unworked bar left to form the reins.

Ideally, the jaw and pivot bolster are in their final form and there should be little reason to reheat them. Efficient forging technique dictates that the reins be drawn out sequentially working



Photo 15.

from the bolster to your cut-off mark, finishing each section before moving to the next. We are forging tongs without using tongs so heat transfer to the holding hand may be an issue. A longer starting bar can overcome this, but too long a bar can be awkward. A gloved hand is an option, but this too has drawbacks (see note below regarding the gloved hand). Regular cooling of the bar in the slack tub is also a useful strategy.

Another technique that can be used is to forge a “heat stop.” When an abrupt change in the bar mass exists and the heat is transferring from the smaller mass to the larger, the heat transfer will be dramatically slowed at the juncture of the two masses. We can use this to good effect in forging these tongs.

Take a yellow heat on the area near the layout mark. Set the bar on the near rounded edge of the anvil with the layout mark about 1/2 inch from that edge. See Drawing 6. Keep the work as horizontal as possible. Forge a shoulder here on two adjacent flats of the bar.

Hit the bar with half faced hammer blows driving it into the rounded corner of the anvil. Rotate the bar 90 degrees– left or right, it does not matter– and forge in a shoulder adjacent to the first. Work back and forth between the two shoulders using the “hit turn, hit turn” rhythm you learned when drawing a taper.

Work these two shoulders until the bar is reduced to about half of its original dimension or 5/16 inch square at the shoulder. Photo 16 shows the result.



Drawing 6.

Target: Take no more than two heats to reduce the bar to 5/16" square at the shoulder.

You have dramatically

reduced the bar mass at the adjacent shoulders. This should help reduce heat transfer to your holding hand.



Photo 16.

You have also established a target dimension on the small end of the reins. With the pivot bolster forged to final form and

the small end target dimension established, the drawing down of the reins becomes a matter of working the mass in the middle into final form.

Move to the horn and draw the rein striving for an even taper in width from the bolster at about 5/8 inch wide to the adjacent shoulders at about 5/16 inch wide. Retain the bar thickness of about 5/16 inch from the bolster to the shoulders.

Use the horn to accomplish 90% of the mass reduction and then move to the anvil face to refine the shape and surfaces. Even using the horn to best effect expect to take several heats to draw down the mass of the rein. (Photo 17)

Once the mass in the middle of the rein is reduced over the horn and the rein has begun to stretch, you should re-establish the linear and sequential approach to drawing down: work a short section complete in each heat; rough it on the horn and finish on the anvil face; work down the length of the rein finishing the area near the “heat stop” last. Compare Photos 17 and 18.

Photo 19 shows the reins drawn and the shape refined.

At the end of your heat cut the bar free on the hot hardy (Photo 20).

The shape is shown in Photo 21 compared to a completed forg-



Photos 17 and 18.

ing.

Step Seven (finishing the reins):

The tong blank should be at least 12 inches overall. With care this is enough length to hold the jaw in the hand while finishing. The faster you work the less heat transfer there will be, but if the jaw gets uncomfortable to hold, cool it in the slack tub.

As the bar heats in the forge, keeping a sopping wet rag on the end you want to hold is another strategy to help maintain a bar cool to the touch.



Photos 19, 20, and 21.

Hint: As a point of preference many smiths work with a gloved left hand which allows them to hold a workpiece that might otherwise be too hot to handle. The drawback to this practice is that it can instill the habit of grabbing a bar without first testing for radiant heat. Tongs are designed for holding hot bar. Otherwise, keep the bar cool to the touch.

With a yellow heat on the end of the bar, draw the remainder of the 5/8-inch square stock. Continue the taper from the bolster to the end.

To keep a cold shut from developing, your first hammer blows on each shoulder should hit at an angle. This pushes the upper edge of the shoulder forward toward the end of the rein. Photo 22 shows the shoulders being struck this way.

Note (forging dynamic): The forged material will move in the path of least resistance. When striking straight down on a corner, the path of least resistance is into the open air. The corner flows out. If that corner is the top of a shoulder being forged flat, the outward flow can result in a cold shut as illustrated in Drawing 7. Avoid this by first hitting the corner at an angle.



Photo 22.

Forge the end of the rein to 5/16 inch square using the horn to accomplish most of the forging (Photo 23).

Round the square section end of the rein. It should look like Photo 24 with at least 3 inches of the rein rounded in section for a comfortable grip. See previous lessons on the proper rounding technique.

The tong blank should look like Photo 25 and measure

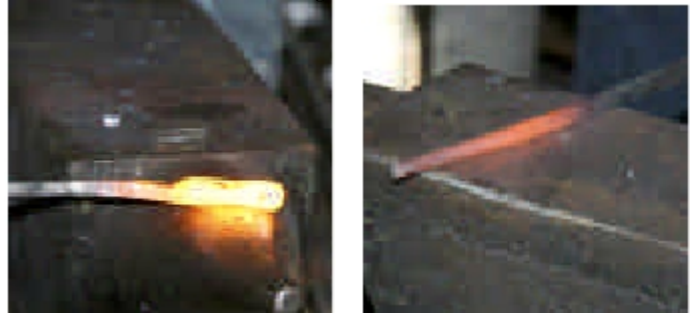
at least 12 to 13 inches from the center of the pivot hole to end of the rein.

If needed, adjust the jaw on the anvil so that it is parallel to the rein. We will alter that in fitting to a specific bar thickness, but parallel is a good place to start. Drawing 8.

Step Eight (the other half):

If you began with a 5/8-inch square bar 24 inches long, 18 1/2 inches of it remains after cutting away the first tong half.

Keeping the held end cool, repeat the above eight steps forging the second half of the tongs.



Photos 23 and 24.

Step Nine (assembly):

Match the tong halves for length of the reins measuring from the center of the pivot hole. Match for the width and thickness of the jaw. It may require reheating one or both of these tong halves to make needed adjustments. Once assembled, changes are awk-



Photo 25.

ward.

Assure yourself that the halves accurately mate with the punched holes aligned. Sometimes the bottom of the shoulder at the base of the jaw needs to be filed so the halves lie flat to each other. This is the “web” mentioned in Step Four. Photo 26 shows the problem area corrected.



Drawing 8.

Use a convenient length of 5/16 inch diameter bar for the rivet. It should be an easy sliding fit in the two pivot holes. If not, slightly forge the rivet stock smaller in diameter or open the pivot holes by re-drifting (they may have distorted in completing the jaw blank) or by filing with a round file.

At light orange heat cut a ring around the bar on the hot hardy 1

and 1/4 inches from the end so that it is almost cut through. See Photo 27. A set of dividers with this distance between the points makes a useful reference. This length of stock will allow a bit more than the equivalent of one diameter length of the stock to extend on either side of the joint. Reference Drawing 9. Keeping the rivet stock attached to the end of the bar provides a handle for the next heat.

Take a light orange to yellow heat on the rivet. Holding the tong halves in their proper orientation, insert the rivet and twist off the excess stock setting it aside.

Work quickly with the peen of your forging hammer to spread the rivet on one end. Flip the assembly to address the other end



Photo 26.

in the same way. Keep the tongs properly aligned and the inside surfaces of the pivot bolsters in contact.

Make sure that the amount of rivet on either side of the joint is approximately equal. Make needed corrections by placing the short side into a thick bolster block or into the pritchel hole and tapping the long side down to match. See Drawing 10.



Photo 27.

Switch to the face of the hammer and flip the tong again. Forge down the edges of the peened end. Angle your hammer to make a short pyramid shape like Photo 28 on one

side then flip to develop it on the other end.

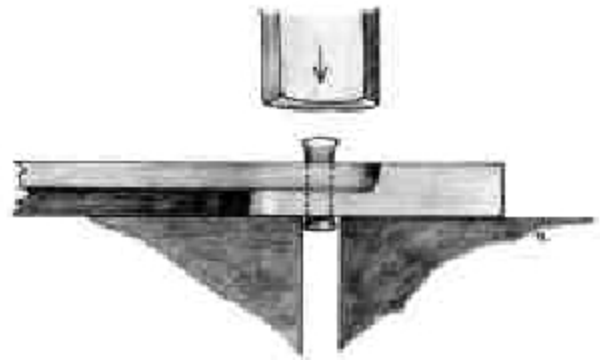
Turning back to the initial end (which will have lost its peak) work around the circumference of the head forging the edges down. Repeat on the other side.

You can continue to work opposite ends of the rivet this way as long as there is visible heat in the material. Once that visible heat has been lost, stop forging. The steel will be most prone to cracking at this temperature.

Photo 29 shows the assembled tongs.



Drawing 9.



Drawing 10.

Hint: If the rivet is not sufficiently headed on this one heat, you can work the head once it has cooled to room temperature. If you feel it necessary to take an additional heat to finish, do so with the following caution: heating in the forge it will be impossible to heat the rivet without also heating and softening the bolster around it. In re-heading, if you hit straight down on the rivet you will upset it through its entire length. It will quickly shorten as the hole surrounding it will widen to accommodate the rivet's increased girth. Worked to an extreme, you can forge the rivet flush with an ever expanding bolster and no rivet head. Consequently, when taking a second heading heat, only work the edges of the rivet head, angling your hammer and drawing the edges down to the bolster surface.

Note: Some smiths use a round faced hammer for heading rivets in this way or a ball peen. Both can be effective, but the job can



Photos 28 and 29.

be accomplished well with the regular cross peen forging hammer too.

Step Ten (freeing the jaws):

Likely you have riveted the tongs tightly together so they will not move. Free the jaws by putting the pivot area of the tongs in the forge fire and heating to a bright red or orange heat. Pull them from the fire and work the reins open and closed through their full range of movement. Keep moving them as the tongs cool to well below red.

Make sure the tongs do not distort while doing this.

Hold the tongs horizontally as if gripping a bar. The tongs should fall open when the fingers release the bottom rein. There should be no sticking or tight spots. If this is not the case, they

may need another round of heating and working.

Step Eleven (adjustment):

These tongs can be sized to hold anything from sheet to a bar about 1/2 inch thick. Above 1/2 inch thick usually requires a slightly different set up for the jaws.

We will size these tong to hold 1/4 inch thick flat bar.

Select a short piece of 1/4 inch thick scrap bar as the “sizer.”

Three or 4 inches long is plenty.

Heat the jaws of the tongs to an orange heat and grab the sizer bar in the tongs. There ought to be enough grabbing effect even with the heated jaws to accomplish this.

Place the jaws on the anvil and forge them to fit with careful hammer blows. Work both jaws equally so they are pushed into full length contact with the sizer bar.

If a post vise is available, it can be used to squeeze the jaws to the sizing bar. Photo 30.

Photo 31 show fitted tong jaws with each jaw making full contact with the bar.

In a similar fashion, the reins can be adjusted to a comfortable hand hold. Small adjustments can easily be done cold on the anvil. Greater change is best done at heat.

This is mostly a matter of changing the angle the reins make where they intersect the pivot bolster. Small changes there will cause significant changes in distance between the two reins where they are held.

A red heat on the area where the reins meet the bolster is usually sufficient, but creativity is often call for holding the assembled tongs on the anvil to effect the needed alteration.

If you have adjusted the reins on the anvil you will probably also need to recheck their fit to the sizer bar.

A post vise can ease the task of rein adjustment. Heat the reins where they meet the bolster and then put the sizer bar in place. Hold the jaws and sizer bar in the vise as illustrated in Photo 30 and manually adjust the reins for comfort and symmetry.

Targets:

It is most important that the two halves of the tongs match. The measurements shown in Drawing 1 are a good guide. Following the method outlined you ought to match the dimensions of one tong half to the other to within plus or minus 1/8 of an inch in linear dimensions. Widths and thicknesses can be forged to within plus or minus 1/16 inch.

Plan on a heat each for the three shoulders needed for the jaws



Photos 30 and 31.

and pivot bolster.

Use one heat to punch and drift the pivot hole. That hole should be centered in the area of the pivot bolster.

Drawing down the reins may take several heats. From the point that the bolster is punched and drifted, use no more than ten heats to produce a ready-to-assemble tong half.

The tongs should tightly grip the bar they were sized to fit, in this case 1/4-inch-thick flat bar. Hold the “sizer” bar in the tongs and the free hand should not be able to easily dislodge the bar from the tong grip.

The joint should work freely without sticking. With the tongs horizontal, as if holding a bar, the bottom rein should fall completely open without sticking when it is released by the fingers.

The reins should be a comfortable distance apart when holding the appropriate dimension bar stock.

The reins should be symmetrical, virtual duplicates of each other.

Further Steps:

Now that you can make tongs, having tongs opens up two more effective approaches to their forging.

1. The first alternative is to proceed as outlined above through Step Five (punching of the pivot hole). At that point cut the forging free at the layout mark. Then use tongs to hold the jaw while the rein is drawn down. Try to organize your forging in a sequential manner. Heat a small section to yellow and draw it on the horn of the anvil. Finish the shape on the anvil face to final dimension then move to the next section.

2. The second alternative forge welds round stock onto the jaw blank using a drop tong scarf weld. This, of course, saves the effort of drawing down the reins. Review the prior lessons on welding.

Less than 3 inches of the 5/8 inch square stock will be needed for each jaw. About 9 inches of round stock 3/8 inch in diameter is about right for each rein.

After forging the third shoulder and drawing a bit of the transition to the reins, leave the bar about 1/2 inch square on the end and forge a scarf. Note that the scarf must be oriented so that the jaw blank will lie on the anvil face for the weld.

Upset the round stock (the vise and a light hammer is useful for this) and forge it to about 1/2 inch square on the upset end and provide it with a scarf.

The drop tong weld proceeds in the normal fashion. After the two parts are joined, forge the area at the weld into a smooth transition from rectangular section to round section. Finally punch and drift the pivot hole.

A refinement of the welding procedure is to weld one jaw section to a round about 18 inches long, enough for two reins. Then weld the second jaw to the other end of the round and cut the two halves free before assembly.

Acknowledgments: Photos by the author and by Jane Gulden. Thanks to the American College of the Building Arts (www.buildingartscollege.us) for encouragement writing this lesson.



What's been keeping me busy

Story and Photos by Robert Timberlake

Is this blacksmithing? Maybe not in the pure sense but here is my story. This was another joint project with my friend Jim Bircher, owner of Beaufort Naval Armory. His commission was for a scaled down Hotchkiss 3" mountain gun and he needed wheels. The real gun was a small size infantry weapon used late 19th century that could be easily disassembled and moved from place to place on pack mules. When needed it was unpacked, reassembled and put to work. Typically it was not towed artillery. Two versions were manufactured, one for use by the US Army and another for sales abroad, mostly Europe. The main difference being the US model had fourteen spokes and the export model had twelve.



Fortunately for me Jim requested export wheels, divisions of six being much easier to lay out than divisions of seven. He also wanted four

wheels since he was building two guns, one for his customer and the other for himself. Jim made the hubs and supplied most of the raw materials. The hubs are gold anodized aluminum, cold rolled steel for the tires and white oak (the original were white oak) for felloes (the wood rim sections) and spokes. Diameter is 21", the tire and felloes 1" wide and the spokes have a four degree cast off, that is the center line of the hubs is offset from the center line of the rim.

The felloe sections were cut oversize in a trapezoid shape and holes drilled for spoke and rim pins. Here is where the twelve spoke wheels makes life easier since all the angles are 60 degrees or multiples of 60 degrees. Fourteen spoke wheels are multiples of 51.428... degrees. I used a simple tenoning jig from my tool collection to make a quick and accurate drill jig. The felloes were then pinned and glued into a hexagon.



Next was to design and build a jig to hold and swing a router in a full circle that cut both inside and outside diameters and another jig to shape the spokes on a router table. (no, I didn't use a spoke shave, not with 48 spokes to make) The hexagons were clamped in place first to cut the ID then re-clamped to cut the OD. Spokes were roughed out on the table saw and contoured with the router mounted in a router table, the angles on a belt sander set to the required angles.

A glue jig was fabricated; the spokes were trimmed to their final length and glued in place. When the glue was set I used the predrilled holes in the felloes as a guide to drill into the outer ends of the spokes and glued a dowel in to

anchor the spoke. The hubs were used as a template to locate the bolt holes which were drilled oversize to allow for a stand off potted in epoxy and everything was bolted together from both sides.

Tires were rolled cold on a slip roll and trimmed to allow a 1/16" gap when fit around the wood rim. The ends were butted together off the rim, TIG welded and the weld was ground smooth. This closed gap reduced the diameter just enough to allow a minimal drive fit tire to rim. Holes were now drilled around the rim for the tire retaining bolts. These holes were counter-sunk a bit shallow for flat head screws. Once in place the somewhat proud flat heads were ground and filed flush with the tire eliminating the screw slot. Finished wheels.

Was this blacksmithing? In the pure sense no, the only use of the forge was to heat and



blacken the square nuts for the tire bolts. But the wheelwrights of yore were in every sense blacksmiths as well as wood smiths. For me this project was a more modern approach to an age old process with the end result being satisfied customers. Work smarter not harder.

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NC ABANA Quarterly Meetings

3rd Quarterly Meeting at Linville Falls

Story and photos by Doug Wilson

NC ABANA convened on a foggy morning in September just off the Blue Ridge Parkway at Linville Falls at the shop of Bill Brown. We were welcomed by massive steel sculptures and gorgeous mountain scenery. Bill invited us into the shop to share some of his background and thinking on art, blacksmithing and business. Nathan Blank, blacksmith shop manager at Penland School, joined him.



The demonstrations were focused on the use of the large power hammers for production work that they are uniquely suited for and which is a trademark of Bill's sculptural work. Nathan started by demonstrating the production of rhododendron leaves for a candlestick that is a standard sale item.



The process was draw out on the Kuhn hammer, 2-3 blows to flatten on the Nazel 3B and back to the Kuhn to vein it. He could produce a leaf in about 3 minutes.



Then Bill moved on to something a bit sweeter... "candy", blacksmith style



He demonstrated the exquisite precision that he could get with a big hammer as he forged the pieces from 4" square tubing.



Bill then brought out the big gun moving outside to the Nazel 5B to demonstrate what that kind of power can do in producing a "small"

sculpture from 4” solid bar and a 3” solid ball.



Nathan and Bill then teamed up to forge an abstract leaf showing some impressive precision and coordination under the hammer. (See the cover photo.)



Following lunch, iron in the hat and a brief business meeting, the event moved around the corner to Nathan's shop.



Nathan specializes in surface textures on steel and iron producing some amazing effects.



If you find yourself on the Parkway, take the opportunity to pull off at Linville Falls and visit Bill Brown's gallery. The beauty of the setting is matched by the sculpture for sale and on display in the sculpture garden.

4th Quarter Meeting at Phillip Gaddy's Shop Story and photos by Doug Wilson

Kannapolis provides a central and convenient spot for meeting in North Carolina and Phillip Gaddy was kind enough to open his shop there to NC ABANA. The weather cooperated with bright but chilly temperatures, perfect for hammering. The agenda led off with Randy Cox demonstrating chasing and repoussé in steel.



Randy explained clearly the technique using hammers to form from the back of the piece against stakes, wood or lead backing to give the piece volume and chisels from the front to provide sharp definition.



Paul Spainhour then took the stage using copper to demonstrate fold-forming.



Meanwhile things were active in the tailgating area with at least half a dozen sellers. Here Randy Stoltz explains the refinements in the design of his clamshell propane forges to a new smith.



Following a lunch delivery, there was a short business meeting. Robert Timberlake presented Cindy Alexander a small (yes – really small)

gift in recognition of her over 20 years of service to NC ABANA.



Meanwhile, at the forge, George Basinger, one of the founding members of NC ABANA was demonstrating forging and heat treating of a chisel while sharing some of the history of the area and his blacksmithing life.

Joel Lane house on the fourth of July

Story by Greg D. Price, Jr; photos by Ashley Price

I'd like to share some photos from a blacksmithing demonstration my wife and I had a chance to help out with at the Joel Lane house (<http://www.joellane.org/>) in Raleigh, NC. Their Fourth of July celebration was a lot of fun, great music, lots of crafts and good food. If you're ever in the area give them a visit. The museum is a lovely



place and the grounds are wonderfully maintained and very attractive with a very friendly group of people working together to keep history alive. I had a chance to make leaves and a fork. The crowd was inquisitive and friendly. Many thanks to the Joel Lane House and museum staff/volunteers for making such a great holiday celebration possible, and especially Mr. Campbell for allowing me to help out around the forge and letting me use a really neat bellows. Ashley, my lovely wife, helped out and was kind enough to take many of the photos. She was everywhere at once it seemed helping wherever she could and taking many more photos than I can share!



The Yates Mill Harvest Festival

On September 15th at The Yates Mill Harvest Festival Marion Campbell, Eric Campbell, Gregory Price-Smith, Erika Price, and Randy Bechtel demonstrated using a double bellows driven side blast forge. This was a fun day of hammering and talking to the public with many people recognizing us from the 4th of July Joel Lane House demo. The demo was very well attended and we handed out a fair number of NCABANA fliers. Sales were light but that was expected since most of the items we put out were aimed at the re-enactor crowd. We spent the day making roses, leaves, J-hooks and various other small items. Dick Snow came over to help us pack down after the Ed Hobbs Tool sale.



Quad State Conference

Story and photos by Jim Kennady

The Southern Ohio Forge and Anvil association put on another fabulous QuadState conference. Each year the QuadState conference is held the third weekend in September at the fairground in Troy OH. The conference had six demos running at the same time, plus a green coal area. There was a large crowd, with blacksmiths from all over North America. Susan Hutchison from Weaverville NC was one of the featured demonstrators, along with Joe Bonifas, Christopher Johnston, David Robertson, Zoe Crist and Jonathan Nedbor. There was a huge area with tailgate sales. This is consistently one of the best blacksmith conferences around and I look forward to returning next year.



Announcing the 40 YEAR Reunion of ABANA

2013 ABANA CONVENTION

At the Alex Bealer
Memorial Blacksmith Shop
at the Westville Village Museum near
Lumpkin GA. March 15-17, 2013



ABANA

1973 - 2013

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& ANVIL RAFFLE



**The Stubbs
Blacksmith
Shop in 1973**

Westville's Blacksmith shop is a copy of the 1850 Stubbs Blacksmith Shop in Lumpkin.

When Westville was founded in 1966, there were only about fifty traditional blacksmiths left in the United States. A groundbreaking 1973 blacksmithing conference at Westville led to the founding of the Artist-Blacksmiths Association of North America (ABANA). Now the premier blacksmithing organization in the world, ABANA has over 5,000 members and still refers to this shop as its birthplace.

~ A long week-end for the 40 YEAR Reunion of ABANA.

~ Guest speakers... ABANA's founding members.

~ Affiliate tents & demonstrations

~ Founding member demonstrations in the forge where it all began.

~ "A Day to remember at Westville" will be the blacksmithing demos.

~ Convention center will be the meals & speakers...

Area Attractions

Lumpkin and area... Columbus... Albany... Westville...

Images & Maps

Historic Westville... Georgia's Iron Living History Museum... Map of Lumpkin, GA...

Raffle of Alex Bealer's anvil.
Proceeds split between ABANA & Westville

Colonel John West, concerned about the loss of traditional crafts and skills began, in 1928, to collect historic buildings and bring them together at his home place in Jonesboro, Georgia. It was there that he created the "Fair of 1850", a display of historic buildings and period craft demonstrations. Following his death in 1961, his collection was purchased and moved to Lumpkin, Georgia on 59 acres of land just south of town. What began with a core of six buildings has grown into over 30 on 85 acres of land. The newly created village was named Westville in honor of Col. John West West.



www.westville.org • www.ABANA.org

Westville: 9294 Singer Pond Road, Lumpkin, GA 31815, 1/2mile south of Lumpkin, Georgia. 1-(888) 733-1850

Local Groups

Triad Area Blacksmiths (Winston-Salem, NC)

Marshall Swaringen
marshall@swaringen.com (336) 998-7827

Meetings

1st Tuesday 6:30PM for demos
3rd Saturday, 9AM for business and all day forging at the
Dixie Fairgrounds, Winston Salem, NC

Southern Foothills Blacksmiths (Mooresville, NC)

Steve Barringer
steve@powerhammerschool.com (704) 660-1560 Meet-
ings
2nd Sunday, each month

Triangle Blacksmith Guild (Raleigh - Durham NC)

Randy Stoltz
rhstoltz@gmail.com (919) 481-9263

Meetings

1st Saturday, even # months at various locations

Brasstown Blacksmiths (Brasstown, NC)

Paul Garrett
pdg86@hotmail.com (828) 835-8441

Meetings

3rd Saturday, even # months Noon to 4PM

B.O.L.T.S. Blacksmith Guild (Kenly, NC) Amos Tucker

amostucker@earthlink.net (252) - 289-7317

Meetings

2st Sat odd # months

Wilkes Teaching Forge (WTF) (Millers Creek, NC)

Lyle Wheeler
chairmakr@yahoo.com (336) 838-2284 Meet-
ings

Meetings

2nd Tuesday, each month 7:00 PM

NC ABANA members are welcome at attend any of the
Regional meetings. Contact the host to confirm date, time
and location.

2013 Meeting Schedule

1st Quarter - March 16 at 9:00 A.M.

Dean Curfman's Oak Hill Iron Mor-
gantton, NC

2nd Quarter - June 29 at 9:00 A.M.

Blacksmiths Shop in Yesterday Village
Dixie Classic Fairgrounds
Gate 9, 27th Street
Winston-Salem, NC

3rd Quarter - Date TBA

Bonus Meeting - November 2 at 9:30 A.M.

J. C. Campbell Folk School
Brasstown, NC 28902

4th Quarter 2013 – Date TBA

Other Events

Fire on the Mountain

April 27, 2013
Spruce Pine, NC

Southeastern Blacksmith Association

May 16-18, 2013
Madison, GA

Tommy McNabb Custom Knife Show

September 21-22, 2013
Winston-Salem, NC
Benton Convention Center.

Dixie Classic Fair

Winston-Salem, NC
October 4 - October 13, 2013
www.dcfair.com

North Carolina State Fair

Raleigh, NC
October 17-27, 2013
www.ncstatefair.org

For updated calendar and event organization go to the NC ABANA website.

www.ncabana.org

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