

# BAM

May / June 2020



May / June 2020  
Volume 37, No 3

# Blacksmith Association of Missouri

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The Newsletter of the Blacksmiths Association of Missouri is published six times a year and is mailed to members of BAM. The annual fee for regular membership is \$30/year; a portion of this amount is for a subscription to this newsletter for one year. Editorial inquiries should be addressed to : Jon McCarty 815 Miller Street, New Haven, MO 63068; (636)432-4468, or send an email to bameditor2015@gmail.com BAM membership inquiries should be addressed to: Bruce Herzog, 2212 Aileswick Dr. St. Louis, MO 63129 (314) 892-4690 or send email to bjherzog@charter.net. Occasionally some material will be copyrighted and may not be reproduced without written consent by the author. BAM welcomes the use of any other material printed in this newsletter provided the author and this organization are given credit.

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Are you interested in taking a class?

How did you learn about BAM?  
\_\_\_\_\_  
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\_\_\_\_\_

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*Send this form in an envelope with your payment to:*

BAM  
 C/O Bruce Herzog  
 2212 Aileswick Dr.  
 St. Louis, MO 63129

I \_\_\_\_\_ hereby apply for membership in the Artist-Blacksmith's Association of North America and enclose \$ \_\_\_\_\_

MasterCard  Visa  Check/Money Order

Card Number

Esp Date:   
 (Required)

Checks must be in U.S. Currency

SEND RENEWAL TO:

**ABANA Central Office**

259 Muddy Fork Rd, Jonesborough, TN 37659

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Adm. Offices & other ABANA projects (Conferences, ect): 31.5% \$11

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Kent & Deanna Harbit

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The Blacksmiths' Association of Missouri is an affiliate of the Artist Blacksmiths' Association of North America, and is devoted to the preservation and advancement of blacksmithing and to communication among blacksmiths in Missouri and surrounding areas. The Newsletter of the Blacksmiths' Association of Missouri's goal is to support these aims. Letters to the editor, tech tips, tools for sale or anything else which furthers these ends will be considered for publication.

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# President Report

By: Steve McCarthy

The June meeting at my shop was like a breath of fresh air. It sure was nice to get together again. Somewhere around 60 people were able to attend. I really appreciate everyone that came. For the demo I planned to weld up a canister damascus billet and talk about the press a little bit. I'm no expert on canister damascus but I had successfully 8 or 10 billets in the past. I had everything prepped and explained the whole process. Then when it came to show time, you guessed it, it didn't weld. I had gotten in a hurry and didn't let it get hot enough. As I started to peel the can off, ball bearings were spilling out everywhere. While I was getting the can off what was partially stuck together, Ken Jansen jumped in with a helping hand. He fixed up another can that I filled with ¼" ball bearings and a high nickel powered steel just like before. This time I used the coal forge and made sure it was hot and had plenty of soak time. The second attempt went good and it welded solid. I then turned the show over to Bernie Tapple who used the 125 lb. Bradley to draw it out into a ¼ x 1 ½ wide knife blank. The whole time Bernie worked the billet, he explained what was happening and what would be covered in upcoming MTS power hammer classes. Thanks again to Ken and Bernie for all their help.

This is my 19th and final letter to you all. BAM has a new president, Santo Giuffrida. Santo volunteered to take the position and was elected during the business meeting. It has been my pleasure to serve as president for the past three years. I really didn't know what I was doing when I took the job. Hopefully, I got a little better as time went by. I called on a lot of people for help with different things. I sought guidance and bounced ideas off several more. Thank you to each and every member for letting me serve as your president. It's an experience that I'll always treasure. I ask that you give Santo the same help and support that you did me.

Until we meet again, Happy Hammering.



## Editor's Notes

By: Heather McCarty

Hello everyone. Just a quick hello and I hope everyone is staying safe and healthy. Jon, myself and the girls seem to be getting back to normal. I took a new job these days and working in the office. It appears to be very empty there, most of the building works remote. I have remote access; however, unless things get bad again I will remain in the office at this time.

Our girls are supposed to head back to school next month. Back to our regularly scheduled programs; however, we all had to complete a survey to determine how "regularly scheduled" it will be.

So far Jon and I have a demo show scheduled for Labor Day Weekend in Hannibal. As far as we know, it

has not been cancelled; however, we will see how it goes.

We would like to welcome our new President, Santo Giuffrida. We look forward to working with you. It has been a pleasure working with Steve. Thanks for everything you have done for us.

Take care everyone,  
Until next time,

Heather McCarty & Family

# Meeting Minutes ~ June

By: Bob Stormer

President Steve McCarthy opened the meeting by having Bruce Herzog present the financial report. Bruce noted that the cancellation of the 2020 BAM Conference will have a negative impact of \$900 to \$1500 for the year, but our financial status is still OK. However, Bruce expressed concern about the drop in membership. The current membership is 541, which is the lowest the last six years. We need to step up our recruiting efforts.

Michael Gorzel wasn't at the meeting to give a conference report, but Bruce noted that we have not yet received a refund for facility rental. He wasn't sure when we would get the refund, or whether it may be applied to next year's conference.

Steve then reminded the attendees that we still need someone to take over the newsletter duties for Jon and Heather McCarty, and also take over as president for himself. To Steve's delight, Santo Giuffrida volunteered for the office of president. The Chairman of the Nomination Committee, Chris Miller recognized Santo as a nominee. Santo was accepted as president by acclamation with a show of hands. We still need someone to take over the newsletter. The newsletter is an essential part of BAM visibility to some of our less tech savvy members as well as other blacksmith organizations around the country.

Matthew Burnett is going to host a one-day conference at his shop in Cameron, MO on Aug 29th. He'll be publishing more details later.

The ABANA conference that BAM was considering hosting has been awarded to Texas and a few of their local blacksmith groups.

Bernie Tappel's hammer-in to be held the last Thursday in July 2020 and Ken Jansen's Black Friday hammer-in were sanctioned as official BAM sponsored events.

Bernie Tappel is also planning a power hammer class sometime in July this year to start fulfilling BAM's commitment to use the 100lb hammer we received as a donation with the stipulation it would be used for educational purposes. A cost of \$50 for the class was approved, and each class will be limited to 4-5 students. The class will address flat die techniques. A liability disclaimer, similar to the one used for the scholarship application will need to be signed by each participant. Additional classes will be offered periodically. More information will be available on the BAM webpage and BAM Facebook page.

Mike McLaughlin talked about the BAM scholarship program and specifically Scott Payne's scholarship payback video available on the BAM webpage under Reference Material. It's a well-prepared video and worth the time to watch it.

The meeting attendees thanked the McCarthy family for hosting the meeting and sharing Steve with BAM as president the last three years.

Bernie Tappel mentioned the Booneville Steam Engine building located in Booneville, MO is available to BAM members who want to host a meeting but don't have the facilities. It's pretty well equipped and you can get more information by contacting Bernie at 573-496-3793 or [bamweb@embarqmail.com](mailto:bamweb@embarqmail.com).



# Steve McCarthy Demo Canister Damascus ~ June Meeting

By: Bob Stormer

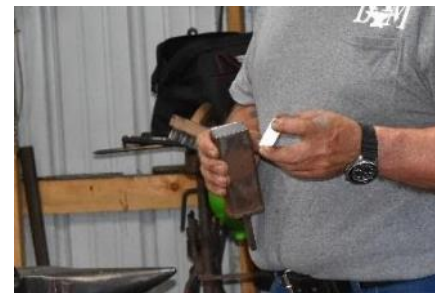
Steve McCarthy chose to do a canister damascus demonstration at his shop for the June 13th, 2020 BAM meeting. Steve had practiced by making several billets before the meeting. He used ball bearings he bought on e-Bay and powdered steel he bought from Kelly Cupples via High Temp Refractory and Tools website: <https://www.hightemptools.com/steel.html>. He chose the 4800KC because it had a little more nickel in it to provide a good contrast with the ball bearings. The 4800KC contains 4% nickel & iron and .8% carbon. You can get current prices by emailing Kelly from the above webpage. The ball bearings are typically 52100 steel with 1% carbon.



Steve started by using a 2” square tubing and coating the inside with white-out and letting it dry. The canister was closed on one end and had a piece of rectangular bar stock welded on so the canister could be gripped easily with tongs. The rectangular bar stock allowed Steve to keep track of the canister orientation during forging, although this is not critical when using randomly placed ball bearings as the filler. He continued by washing the ball bearings with acetone to get all the oil off of them since they were likely recycled by seller. He used a small bucket to soak the ball bearings in the acetone and a kitchen strainer to dry them before putting them in the canister.



After loading the canister with the ball bearings Steve added the 4800KC powdered steel a little at a time, tapping the canister to “settle” the powdered steel between the ball bearings. It is essential to get all the air out and have solid packed canister. After packing the canister, Steve covered the open end with cap that was also coated with white-out. The cap fit inside the canister so it could be tapped down further compressing the contents. Following welding the cap on, he drilled a 1/8” hole it that end. He then poured about a thimble full of kerosene into the canister through the hole. The purpose of the kerosene is to burn off any oxygen that may be trapped in the canister. The hole acts as an exhaust port to keep pressure from building up and possibly exploding.



While the canister was heating in the gas forge Steve discussed his home brew hydraulic press. It has a cylinder with a 6” bore and a 2 ½” ram. He uses a 7 gal/min pump and achieves about 24 tons of force. He also rigged up microswitch to the electronically control valve so he can just release the foot switch and the ram will return to the up position just a few inches from the top of the billet. It’s a neat setup. Once the billet was heated sufficiently, about 20 – 30 minutes, Steve began forging it down. He had made some squaring dies, but wasn’t happy with them and used the flat dies on the press. Using the flat dies required careful control of the press to keep from distorting the billet. He tried to keep it square until he was ready to begin removing the canister to reveal a solid billet. Once he had the square sized the way he wanted it, he started grinding the corners off so he could peel the canister off. When he started separating one end of the canister Steve noticed a few of the ball bearings that were not completely welded and fell out. Hoping the center was welded better, Steve kept peeling the canister off, but very few of the ball bearings had successfully forge welded. The diagnosis was that the gas forge had not gotten hot enough.



# Steve McCarthy Demo Cont. ~ June Meeting

By: Bob Stormer



Ken Jansen began working on making another canister and fired up the coal forge for another try. The canister was prepared in the same way with the same contents. Steve began forging the new billet (Act II as he called it) rotating it frequently to ensure even heating throughout the billet. Once he was sure the billet had reached the appropriate temperature, he pulled it out and began forging it in the press the same way he had previously done. On about the second heat/press cycle Steve said he could tell the difference with this billet. It felt more solid and he could see the canister side bulging while the billet felt solid.



Once the billet was the appropriate size, he started grinding the canister off again. This time when he peeled the canister off there was a solid billet inside. Ken Jansen helped Steve clean the billet with a wire brush and then Bernie Tappel used the Bradley power hammer to make a billet about 1 1/2" wide by 1/4" thick, perfect for a knife or tomahawk.

Although the demonstration didn't go as Steve would have preferred, it provided a good lesson in persistence.



I did not get a picture of the finished demo piece, but I did get one of a piece Steve completed prior to this demonstration using the same ball bearings and powdered steel. The dark areas are the ball bearing high carbon steel, and the lighter parts are the powdered steel with the high nickel content.





---

# Iron In the Hat ~ June

## Donated by

Jake Jacobs  
Chris Miller  
Joe Sainz  
Dennis Marshall  
Jake Jacobs  
Karen Bouckaert  
Joe Sainz  
Joe Sainz  
Joe Sainz  
Chris Miller  
Jake Jacobs  
Steve McCarthy  
Charlie Carpenter  
Bernie Tappel  
Ken Jansen  
Steve McCarthy  
Pat McCarty  
Jeff (Lou) Mueller  
Santo Giuffrida  
Brandon Crawford  
Bob Eckert  
Mike McLaughlin  
John Dilsaver  
Joe Sainz  
Mike Morton  
Jeff (Lou) Mueller  
Dennis Marshall  
Karen Bouckaert  
Brandon Crawford  
Bernie Tappel  
Mike McLaughlin

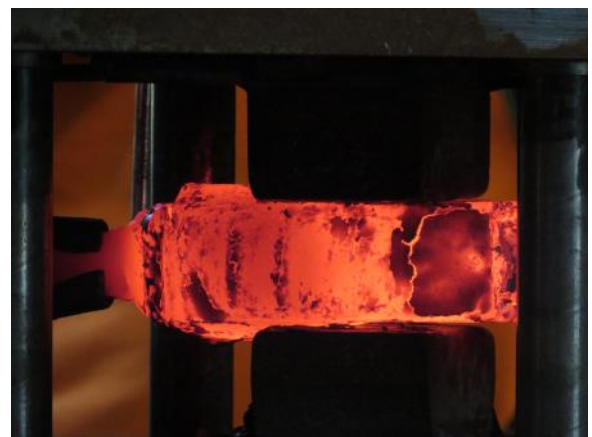
## Won By

Heather McCarty  
Don Anders  
Mike Morton  
Charlie Carpenter  
Denny Quinn  
Bob Stormer  
Lori McCarthy  
Charlie Carpenter  
YAY-ME  
Brian Thomas  
Denny Quinn  
Mark Sampsel  
Heather McCarty  
Jake Jacobs  
Landon Crawford  
Jon McCarty  
Karen Bouckaert  
Lori McCarthy  
Bob Stormer  
Brian Thomas  
Jake Jacobs  
John Sherwood  
Mike Morton  
Don Anders  
Jake Jacobs  
Bob Eckert  
Denny Quinn  
Charlie Carpenter  
Chris Miller  
Charlie Carpenter  
Lori McCarthy

## Item

Anvil Mate  
Miter Saw  
Medium Carbon Rods  
Freon Helium Tank  
Coal Starter (Tinder)  
Buckets  
Medium Carbon Rods  
Freon Tank  
Medium Carbon Rods  
Deer Antler  
Coal Starter (Tinder)  
Dog Cage  
Coil Spring  
Coil Spring  
Hot Cut  
Canister Damascus Demo Piece  
Enamel Hummingbird  
Books  
Jack Hammer Bit  
Planer Blades  
RR Spikes  
Jack Hammer Point  
Mower Blades Etc.  
Fire Pot Supply  
RR Spikes  
Books  
RR Spikes  
IV Pole  
Old Osage Orange Wood  
Coil Spring  
Various Casters

# June Meeting Photos







# Trade Items

## An Axe, Hatchet or any Chopping Tool ~ June



**Made By:** Santo Giuffrida  
**Traded To:** Dennis Marshall



**Made By:** Bob Stormer  
**Traded To:** Ken Jansen



**Made By:** Dennis Marshall  
**Traded To:** John Sherwood



**Made By:** Michael Lumetta  
**Traded To:** Bob Eckert



**Made By:** Ken Jansen  
**Traded To:** Bob Stormer



**Made By:** Pat McCarty  
**Traded To:** John Dilsaver





**Made By:** Chris Miller  
**Traded To:** Brandon Crawford



**Made By:** Brandon Crawford  
**Traded To:** Chris Miller



**Made By:** Mike Morton  
**Traded To:** Michael Lumetta



**Made By:** Mike McLaughlin  
**Traded To:** Steve McCarthy



**Made By:** John Dilsaver  
**Traded To:** Pat McCarty



**Made By:** John Sherwood  
**Traded To:** Mike Morton



**Made By:** Bob Eckert  
**Traded To:** Mike McLaughlin



**Made By:** Steve McCarthy  
**Traded To:** Santo Giuffrida



# Ron Humphries Scholarship Write-Up

By: Ron Humphries

In the month of June 2020 I had the pleasure of taking Blacksmithing 200, Introduction to Toolmaking at the Missouri School of Blacksmithing. This school is owned and operated by Matthew Burnett. Matthew is a very good teacher. He kept things interesting. He put out a lot of information and some of it was overwhelming at first, but the more we did the more it made sense. For me he kept things fun, and I think I learned a lot.

The focus on the class was tool-making. We learned all the terminology. The things we had to do to make the tools. Then we made the tools. The tools we made were, a cold chisel, hot chisel, round punch, square punch, fuller, nail header, and hot cut hardy.

We used a coal forge and forged all of the tools we made. We learned how to bend, cut, draw, punch, twist, and upsetting. After making tools we learned how to heat treat the tools that needed to be. There are four process in heat treating, hardening, tempering, normalizing, and annealing.

Before we started making the different tools, we learned about the different types of steel. The tools that we made were all made from different types of steel. Most of which you can find at the local scrap yard. The different types of metals we used were a railroad spike, a railroad buckle, a couple of different size coil springs, some 1/4" round stock, and a small car axle.

After making each tool depending on which tool it was. We had to heat temper. This part of the process for me was hard, because I tend to get into to much of a hurry, and get things too hot.

But, all in all things turned out ok. When tempering you have to get the right colors to get the hardening you want. After you get the right color the tool should be diamagnetic, then clean the tools up with sandpaper or grinder. We also discuss the different quench mediums, water, oil brine, and super quench.

In the end we all received a lot of knowledge, had lots of fun and best thing was, we were able to come home with tools we made with our own two hands.

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# Pep Gomez Damascus Class- 2018 SFC Conference

By: Jack Grubb

It was windy (no surprise) and rainy for the start of the 2018 Salt Fork Craftsmen Annual Conference, and way colder than you would expect in October in south Oklahoma. It rained for both days of the conference and the first day of the class. My wife and I stayed in our van. Only one of my classmates and his wife, who camped in a tent, saved us from being the most primitive campers there! It turned out to be worth the sacrifice.

In the Damascus class, we were to accomplish three billets; Plain laminated, that we could finish by grinding; a cannister billet from ball bearings and 1095 powdered still; and an “explosion” billet of the type that could be used to make a mosaic pattern. We’ll focus on the cannister for this article.

Basic to all pattern welded steel is forge welding, so anything that inhibits the weld must be eliminated. Pep stressed that you will have some failures: no way to avoid it. Don’t be discouraged.

The first part of the class applied to all the billets. Material prep is first. All materials must be free of scale, rust, grease or anything that hinders the weld. We were supplied with clean, shiny materials for the class. Remember to brush loose scale off between heats. For the cannister, the new ball bearings were cleaned of all oil. Powdered 1095 is ready to go, of course.

The next thing is the fire. Everyone was using gas forges, two people to each forge (some graciously shared their forges). Coal could be used but would be much more difficult.

Pep gave us a handout, the same one from 2018 BAM convention, part of which is a guide to welding heat for steels of different carbon content. He really stressed the need for your forge to be at 2350 degrees Fahrenheit. Let your forge get up to temp or putting in a large lump of steel will cool it down. He spent a lot of time showing how the fire should look: the “Dragon’s Breath” coming out of the ends of the gas forge should have an orange and slightly blueish-green color. This indicates not quite all the fuel is being burned, which in turn means that all the oxygen is being consumed. This reduces scaling and oxidation. Pep checked all the forges with a kiln thermometer to make sure they were at the proper temp. He recommended buying one if we planned on doing a lot of

pattern welded steel.

With the first day behind us, having done a plain laminated billet, it was time for day two: Cannister Damascus. We had a low failure rate on all three billets (more on that later). We started with a prepared cannister of square, thin wall, steel tubing 1 ½ x 1 ½ by 4 ½ with a plate welded to one end. Pep doesn’t use White-Out, preferring to grind off the can after the desired billet size is reached. He does have more awesome grinding equipment than most of us though. We filled the cannister with 5/16” ball bearings, adding 1095 powder as the bearing built up to make it easier to get the powder settled all the way to the bottom. An orbital sander can be used to vibrate the can to completely settle the 1095 around the bearing. I was going to tighten the grinding wheel on my 4 1/2” grinder off-center to set up a vibration, but I saw everyone using the gas engine of the welder to settle the material. Worked awesome. It usually takes a couple of times refilling and vibrating the cannister to get it full. This would be a bad time to drop it! Before you weld the top on the cannister, you need to pack something flammable in the cannister with the steel. This will consume the oxygen left in the tiny spaces between the grains of powdered steel. Some use a pinch of coal dust or a couple of drops of kerosene. I just used a bit of paper towel.

Make sure the cannister is still completely full, and clamp the top on the cannister with a large “C” clamp. Now the cannister is ready to weld up. It is welded leaving a small pinhole where the welds meet. This is fairly critical. Too large a hole will let the powdered metal escape in a fireworks display of sparks: if closed completely the cannister could rupture or even explode when heated. (If you need practice welding, do it before attempting the cannister). Now attach a handle. Pep used a short piece of ½” sq which can be gripped with v-groove tongs. You can use a long handle without tongs but remember, it will get HOT before you’re done with your billet. Now your cannister can go in the forge. Allow your steel time to get up to temperature. Pep stressed waiting until the can is the same color as the inside of the forge. Caution: don’t stare into the forge for long periods of time without welding or dydidium goggles.

I mentioned earlier we had a low failure rate. Pep pointed to the fact that we had one press and one tire hammer for 10 people. Waiting was good: more time

# Pep Gomez Class— Cont.

By: Jack Grubb

for metal to get up to temperature. Take that to heart; low material temp is a main cause of failure.

Some of the students liked the press and some liked the power hammer. Whichever you use, work from all sides of the billet to weld, then draw the billet out. Leave enough thickness to grind off the cannister, but the closer to final thickness your billet is, there is less thickness of the can to grind off. By now you will be dying to see what the pattern will look like. I stopped grinding too soon and only saw a little bit of pattern. Anyway, a bath of ferric chloride will bring the pattern up for a preview. After heat treating, the color differential between the light and dark steel will increase markedly. Longer etches or use of the more dangerous and faster nitric acid will also increase the contrast.

Cannister Damascus can be used in an amazing variety of ways. The ball bearing pattern is the simplest. Ron Rybar's scripture Damascus is in the upper range. It can be used to create very specific mosaics and letters and pictures. You may not find the "polka dot" pattern of 1095 and ball bearing very exciting; I don't myself. But it is a good place to start.

I'll add some of Pep's general advise:

Don't be discouraged by failure

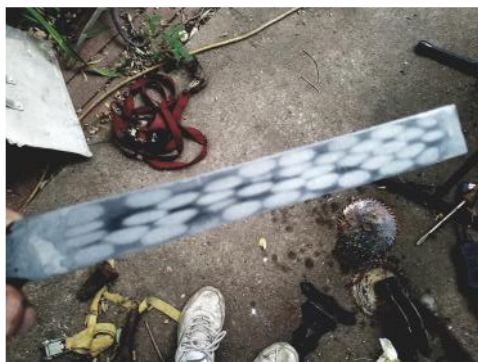
Keep working, don't just say "I can't get it"

There are other ways that may work for you, (i.e., use White-Out on the inside of the can if you prefer)

Pep generally likes a power hammer instead of a press because it blows off slag where a press doesn't. Not applicable to cannister.

Cannister Damascus is one more tool in creating patterned steel. Ball bearing and powder is simple, but the same process is used to create patterns like Raymond Rybar's scripture Damascus.

"Thanks" are in order for the following: Pep Gomez himself – he is a teacher with a capital "T"; Bill Phillips, who shared his forge with me and wouldn't take a cent for propane; Eric Jergensen, who let me use a better pair of tongs. My wife, Lillie, who propped me up during a difficult time and got me there, and God, who probably gave Tubal-Cain enough information for his start in becoming a forger of 'every sort of copper and iron'. And thanks to all of you for letting me write this article.



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# Scholarship Application

Name:

Address:

Phone & Email:

What class or event do you wish to attend?

Where:

What is the cost?

Tuition:

Travel:

Lodging:

Other:

Briefly, describe how attending the particular class/event will advance your blacksmithing skills and be helpful in promoting the craft of blacksmithing. Identify the specific skills you expect to learn during this learning experience. (Additional pages if necessary)

I understand that as a requirement of receiving this scholarship, I will be required to submit an article about the education experience attended with appropriate notes and diagrams to the BAM newsletter no later than 3 months after attending the event AND within 1 year of the event, I will present a demonstration of the newly learned skills at a BAM meeting or complete a video to be placed on the BAM library. One third of the total scholarship amount will be awarded before the event, one third on submission of the article to the newsletter editor, and one third after presenting the demonstration at a BAM event.

Signed \_\_\_\_\_ Date \_\_\_\_\_

Send Scholarship applications to:  
Mike McLaughlin, 122 Milwaukee, Lawson, MO 64062  
cowpie42@hotmail.com 816-296-3935

This page may be printed

# Lou Mueller ~ October 1, 1927 - May 12, 2020

Mueller, Louis Edward "Lou", age 92, fortified with the sacraments of the Holy Mother Church, died peacefully at home with his family on Tuesday, May 12, 2020. Lou is the beloved husband of Patricia Mueller (nee Holden) for 69 years; dear father of Gregory (Linda) Mueller, Christine Jeep, Karen (Mark Dreyer) Mueller, Bruce (Linda) Mueller, Richard Mueller, Lisa (David) Gellman and Jeffrey Mueller; loving grandfather of 14 and great grandfather of 5; dear brother of Clarence (late Joanne) Mueller. He was born in St. Charles, Missouri on October 1, 1927 to Edward and Henrietta. He left school at 15 and started working in machine shops. He enlisted in the U.S. Army at age 17. Lou met the love of his life, Pat, while they were both working at the National Guard 138th Infantry Armory in downtown St. Louis. In 1946 Lou was deployed, injured, and honorably discharged. They were married on September 30, 1950. An enlightened inventor, brilliant thinker, and resilient entrepreneur, Lou was founder and President of Mueller Industries. He started what was originally L. E. Mueller Tool Co. in his basement working in the evenings with just a mill and grinder - machines financed by the sale of his first sports car. The same

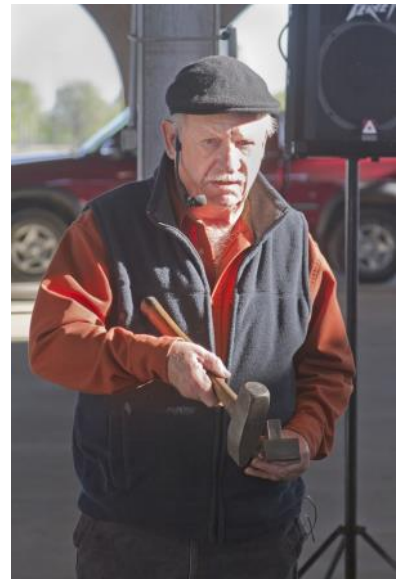
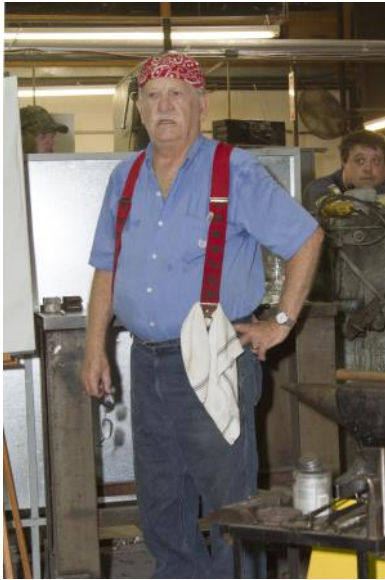
sports car fondly remembered for the leaky roof after his first date with Pat, when she expressed her disdain for convertibles by pushing her hat pin through the roof. It was Pat's spirited independence that Lou adored.

With love, hard work, a generous spirit, and so much joy, Pat and Lou raised a family and built the business that continues with his sons, daughters, grandsons, and trusted employees. The patriarch of our family, he will be remembered always for what he provided. He was a dynamic creator - on the one hand a skilled tool and die maker with a focus on precision and on the other a creative artist blacksmith forming roses out of steel. He was the inventor for three patents on file with the US Patent and Trademark Office and one currently pending. He was a mentor to countless individuals giving his time, experience, and creativity wherever he could help.

He was a Scout Master, President of the St. Louis Strassenfest, and President of Artist Blacksmith Association of North America.







# BAM Gas Forge Rebuild w/ ITC-100

By: Bob Stromer

## DISCLAIMER:

I'M GOING TO START WITH A DISCLAIMER THAT ANY DIFFERENCES BETWEEN THE RESULTS OF THIS TEST AND THE PERFORMANCE CLAIMS OF THE MANUFACTURERS AND DISTRIBUTERS OF ITC-100 AND SATANITE ARE LIKELY DUE TO THE LESS SCIENTIFIC APPROACH I HAVE TAKEN THAN WHAT THE MANUFACTURERS WOULD USE. THIS TEST IS LIMITED TO THE USE OF MY EQUIPMENT AND MY PROCESS FOR APPLICATION OF THE ITC-100 AND SATANITE AND MY INTERPRETATION OF THE RESULTS.

I had been having trouble with inconsistent forge welds for some time and decided to see if I could improve the forges performance. Obviously, it's not operator error, so it must be the forge. Right? The forge I'm using is the early version of the BAM gas forge that was built at a BAM workshop at Bob Alexander's shop sometime in '98 or '99. It was made of castable refractory with a 4" diameter forge chamber that is 14" long. It has a sheet metal frame to give it some protection if something goes wrong inside the forge. It uses a squirrel cage fan to force the propane/air mixture through "home brew" design burner. The forge burner is a rectangle that is about 4" wide and about 1" high. If you look at the photo of the forge, you can see where the 2" pipe is welded to the burner on the left side, making a right angle turn into the forge. My forge now has a needle valve to meter the propane into the burner, instead of the ball valve I started with. There is an aluminum plate over the opening of the fan to allow me to meter the air going into the burner.



I've used the forge for over 20 years and about 3 years ago I had to rebuild the floor because the refractory had been "scraped" out enough that there was only about 1" of refractory left in floor of the chamber, and a lot of that was hardened flux. I cut out what was left of the floor refractory and replaced it with hard fire-brick about 2 1/2" thick.

The remaining refractory was pretty heavily pitted so I decided to coat it with a layer of Satanite to smooth it a little before adding a coating of ITC-100, The purpose of the ITC is to reflect the heat, which would result in higher temperatures contained within the forge, rather than heating the refractory and counting on the radiation of that heat. I decided to try to quantify the results of the forge improvements. I bought the Satanite and ITC-100 from High Temperature Tools & Refractory, <https://www.hightemptools.com/supplies.html>.

To measure the results, I used a K-Type temperature probe connected to a PID (proportional with integral and derivative control) to show the forge temperature at various times after startup. I've lost the information on the K-type probe I

used, but the PID website link is: <https://www.lightobject.com/Electronics/Temperature-Controller/JLD7100-PID-Temperature-Controller>





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JLD7100 PID Temperature Controller from Lightobject.com. It shows the ambient temperature I started with.



The picture above shows how pitted the interior surface was when I took the first set of reading before adding a layer of Satanite to smooth it out in preparation for the ITC-100.



This photo (from the rear of the forge) shows how smooth the surface was after a layer of Satanite and before I added the ITC-100 coating. After adding this layer of Satanite I ran the forge for short periods over a couple of days to help cure it before bringing the forge up to operating temperature. After taking the temperature readings with just the new Satanite layer. I waited a day and then brushed the ITC-100 coating on. I did it with two thin layers as recommended. I didn't take a photo of the ITC-100 coating since it's just a grey color and wouldn't look much different than this photo.

Table 1 shows the three different readings I took over three different days to allow for complete cooling between tests. I inserted the probe tip about 2 inches into the forge from the rear for all readings through 45 minutes. I purposely tried to keep the probe out the burner flame to try to get better overall internal temperature. For readings in 47\*\* row I moved the probe tip close to the center of the forge, where the actual workpiece would be located. (I probably should have done that for all the readings.) The forge was empty for all readings, and the back of the forge was closed off with firebrick.

# BAM Gas Forge Rebuild w/ ITC-100 Cont.

By: Bob Stromer

ELAPSED TIME AFTER STARTUP (MINUTES)	PITTED CONDITION	SATANITE COATING	SATANITE PLUS ITC-100 COATING
	TEMPERATURE °F	TEMPERATURE °F	TEMPERATURE °F
5	1505	1595	1535
10	1675	1756	1727
15	1788	1860	1844
20	1866	1938	1924
25	1929	1999	1988
30	1976	2050	2035
45	2078	2148	2136
47 **	2174	2249	2210

TABLE 1

As you can see from the table, the temperatures rose after I put the new coating of Satanite on to smooth out the surface. However, I was disappointed to see the temperatures drop a little after I put the ITC-100 on. I was hoping for an increase of at least 100°F. There may be a couple reasons for this. I may not have applied the ITC-100 correctly, although the instructions are pretty simple to follow. Another reason may be that it works better when applied over Satanite covered KAOWOOL as opposed to a cast refractory. The one take away I get from the numbers is that smoot forge walls seem to be better than the rough, pitted walls.

Another thing I got out the data is that my forge seems to be on the ragged edge of a reliable forge welding



Sept 19, 2020 / Sept 26, 2020 - MTS Beginner Training - Eminence, MO

Oct 17, 2020 Meeting - Jeff Muller - Fenton, MO

Oct 24, 2020 - Phil Cox tool auction (date may change) - Hamilton, MO

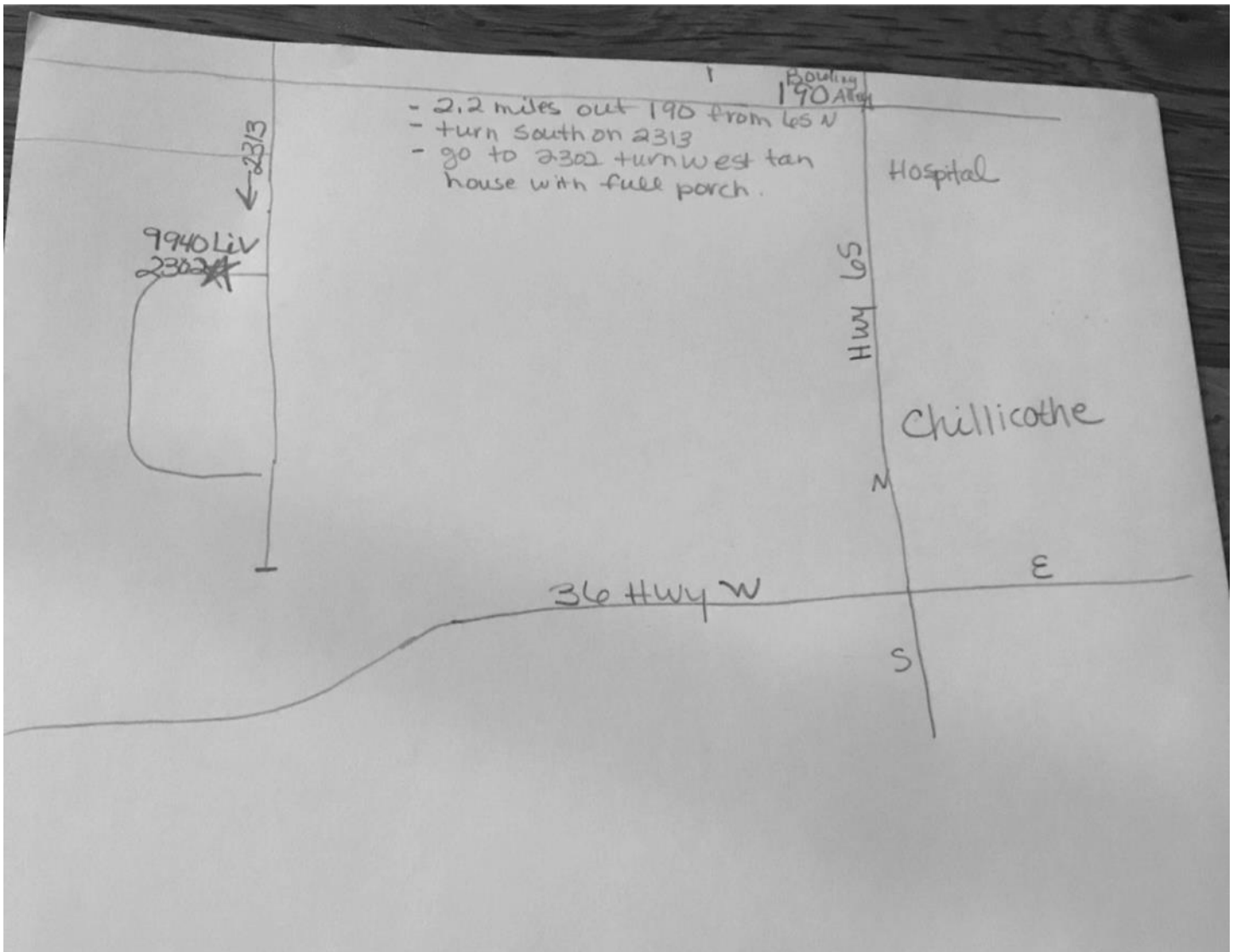
November 27, 2020 - Black Friday Hammer In - Ken Jansen

January 1, 2021 - New Years Day Hammer In - Pat McCarty

If there is an event that is not listed or a meeting that you are interested in hosting please contact us at [BAMeditor2015@gmail.com](mailto:BAMeditor2015@gmail.com).

# Next Meeting: August 8, 2020

Hosted By: Willie Bagley  
9940 Rd 2302  
Chillicothe, MO 64601



Food will be available  
**Trade item:** Anything forge welded  
**Demonstrator:** Bill George  
Open forge after demo and meeting



# Coal Stations

**Price per bag:**

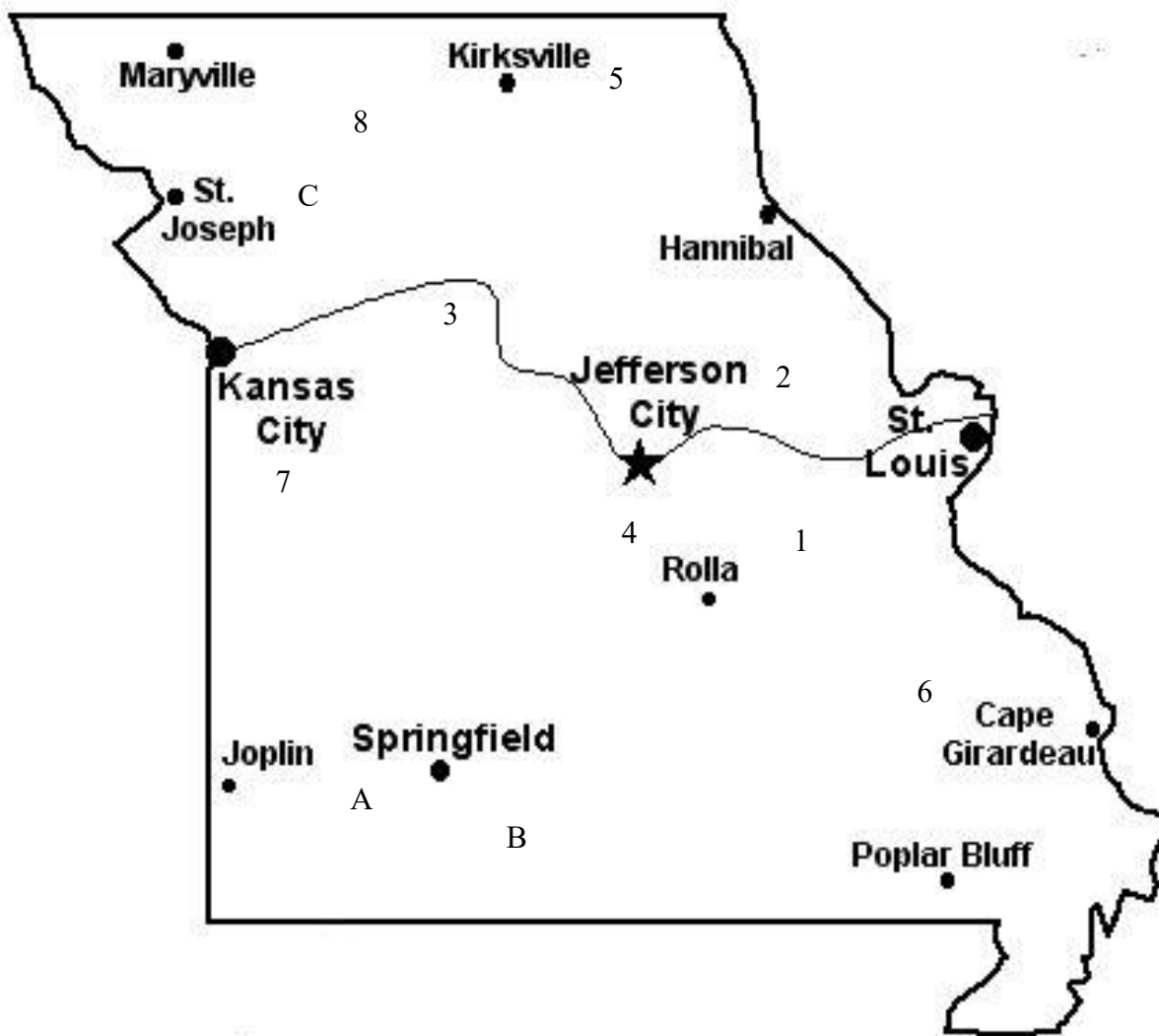
BAM Members \$15.00

Non Members \$20.00

Member's pickup at Bob Alexander's - \$13.00

Coal keepers earn \$3.00 per bag

Bags are approximately 50lbs. each



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## BAM Coal

1. Bob Alexander (636) 586-5350  
14009 Hardin Rd.  
DeSoto, MO 63020
2. Ken Jansen (636) 295-5844  
2257 Carter Rd.  
Moscow Mills, MO 63362
3. Doug Clemons (660) 631-1257  
29377 Durango Ave.  
Malta Bend, MO 65339
4. Jerry Rehagen (573) 744-5454  
390 Bozina Valley Trail  
Freeburg, MO 65035
5. Joe Hurley (660) 988-8872  
or (660) 626-7824  
26306 State Hwy D  
Downing, MO 63536
6. Bob Maes (573) 866-3811  
Route 1 Box 106 K  
Millersville, MO 63766
7. Bryan Lillibridge (660) 638-4536  
1545 NW 300  
Urich, MO 64788
8. Bill George (660) 247-0426  
19133 LIV 355  
Chillicothe, MO 64601

## Non BAM Coal

- A. Tim Johnson, Springfield, MO 417-886-8032 - \$.40/lb. check, \$.35/lb. cash. Bring your own containers.
- B. Coal for sale \$12 per approximate 50 lb bag with bulk delivery available.  
Matthias Penn Rt. 1 box 479 Ava, Mo. 65608. (417)-543-2148.  
Or e-mail [tytheblacksmith@yahoo.com](mailto:tytheblacksmith@yahoo.com).
- C. Coal for sale \$15 per approximate 50 lb. bag. Missouri School of Blacksmithing  
Matthew Burnett 816-575-2798, 3100 NW Winchester Rd Cameron, MO 64649

## Coal Specifics

A few notes on our coal:

- 1) Not all coal is created equal. The coal we buy is from the West Virginia to Pennsylvania vein and is a high metallurgy grade unlike coal from other areas.
- 2) Raw coal from the bagging company is stored outside which allows it to get rained on, (rain is water which weighs 8.4 pounds to the gallon). If the coal is bagged wet and then dries out the weight will change.
- 3) The coal fines which when mixed with water to form a paste burns along with the chunks of coal but during shipping and handling may sift out of the bags causing a weight loss.

So, the bottom line to all of this is we are selling coal in approximately 50 pounds bags.

# BAM Tailgate

## Buy, Sell, Trade

### Individual Classified ads:

**For Sale:** Century old—dated 1901 Champion #400 Blower / hand crank, works well. Blower forge Co. Nancee 573-392-5533

BAM Books from Jan/Feb 1994 - Present & binders for sale. Contact James Conway 563-366-4244

**For Sale:** 1 steel layout table; 27 inches x 39 inches. No stand. Asking price \$75.00  
Plasma Cutter; Esab Corporation, 1- L-Tec plasma cutter, PCM 750 I, 50 amp output, 12 foot leads, 220 volt single phase, 50 amp input, Torch Thermacut PT -23, Asking Price \$750.00

### Commercial / Resource ads:

**Beverly Shear Blades Sharpened.** Remove blades from shear and ship to Clay Spencer, 73 Penniston Pvt. Drive, Somerville, AL 35670 \$41 includes return postage, additional cost for deep notches or blades previously sharpened at angle.

**Little Giant--** We can do repairs on any or all components of your Little Giant front assembly. Contact Roger Rice, Midwest Machine, 6414 King Road, Nebraska City, Nebraska 68410. (402) 873-6603

**Roller Blade Treadle Hammers** (Clay Spencer design) for Sale or Workshops led to build hammers. Bob Alexander, e-mail to scruboak4@netzero.com, or call 636-586-5350.

### Information / Education:

#### Missouri School of Blacksmithing

Cameron, MO

Instruction by Matthew Burnett

Group and Individual classes offered.

816-575-2798

**Beginner & Intermediate classes** are being held at Mueller Industries (via Craft Central), 12951 Maurer Industrial Drive, St. Louis, MO 63127

To see class listings or to register for classes, visit our website, [craftstl.com](http://craftstl.com)

For more information call 314-842-0796 or email; [Brendan@muellerstl.com](mailto:Brendan@muellerstl.com)

**Tong Making Class**-Weekend Course, 4 people per class - \$125 per person. Contact: Charles Comstock, Rt.1 Box 20, Deerfield, MO. 64741 (417) 927-3499, or (417)-321-2286 cell

**Back issues** of Jerry Hoffmann's Blacksmith's Journal, Call 1-800-944-6134 for more information.

**Classes offered,** The Ornamental Iron Shop  
Contact the instructor to register and customize your class.

John D. Thompson – Metalsmith  
3923 Hwy 25; Hodges, SC 29653 864-374-3933

**Classes** at Pieh Tool Company, Inc. - Camp Verde, AZ

The Bill Pieh Resource for Metalwork.

Call now for more information and to enroll:

(928) 554-0700 or (888) 743-4866.

[www.piehtoolco.com](http://www.piehtoolco.com).

**Matthias Penn** is offering introductory & beginning blacksmith classes. 417-543-2148

[Tytheblacksmith@yahoo.com](mailto:Tytheblacksmith@yahoo.com)

**oldschoolcrafts** Blacksmith School, Joe Davis  
12625 Lawrence 1175, Mt Vernon, MO 65712 phone 417-461-0387 on the web [www.oldschoolcrafts.org](http://www.oldschoolcrafts.org) E-Mail [oldschoolcrafts@hotmail.com](mailto:oldschoolcrafts@hotmail.com)

**David Norrie blacksmithing school** in Colorado

David Norrie 303-859-0770 <http://www.forgewithintention.com>

or <http://www.davidnorrie.com>

**The Upper Midwest Blacksmiths Assoc (UMBA)**

video library. An index list can be viewed at

[www.umbaonline.org](http://www.umbaonline.org)

They are VHS or DVD-R Cost is \$5 each with \$2 per order shipping there is no return date, you keep the video for this price. All videos are made at group demos, no commercial titles.

**Blacksmithing E-books on CD**

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Now eight titles are available on CD, \$4/each, or all eight books, \$24 postpaid. More books are in production and will be available soon- order on-line at [www.blacksmithingebooks.com](http://www.blacksmithingebooks.com), or check/MO to Brian Gilbert, 3404 Hartford Dr., Chattanooga, TN 37415.

**Tire Hammer Plans** by Clay Spencer  
Send Paypal for \$30US to [clay@tirehammer.com](mailto:clay@tirehammer.com). Or check/money to 73 Penniston Pvt. Dr., Somerville, AL 35670. I can mail a copy or email PDFS.  
Beverly shear blades sharpened. Remove blades, mail in small Flat Rate box, include check/money order for \$50, includes return postage. [clay@otelco.net](mailto:clay@otelco.net), 256-558-3658.

### **Power Hammer page**

I've taken some time to collect and post old info, catalogs and brochures on power hammers. The link of our NEB web page to this information is: [http://www.newenglandblacksmiths.org/power\\_hammer\\_info.htm](http://www.newenglandblacksmiths.org/power_hammer_info.htm) Ralph Sproul

**Rochester Arc & Flame Center!** Featuring Blacksmithing, Welding & Glass Blowing, over 30 classes available for all levels of interest, [rocafc.com](http://rocafc.com) 585-349-7110

### **Products:**

**Forge-Aprons** offers seven different styles of leather blacksmith aprons; the Original bib, the Short bib, the Full-Cut bib which offers greater chest coverage, the Lap apron, two sizes of Kid's aprons, a Budget apron and our brand new, limited edition Flame apron which features flame imprinted buckles and an anvil engulfed in flames on the logo pocket.  
[www.Forge-Aprons.com](http://www.Forge-Aprons.com)

**Heavy-Duty Fry Pan Blanks** 9" diameter, tapered sides 12

Or 13 gauge steel (approx.2 pounds) no predrilled holes for the handle \$14.00 each..1-4, \$12.00 each.5-9, \$10.00 each...10+. Shipping: \$5.00 plus\$1.00 each frypan Bob Tuftee 563-349-3369 21718 277th Ave LeClaire, IA 52753

### **L Brand is the Official Coke of the WCB and Kentucky Horseshoe School.**

Website: [www.BlackSmithCoke.com](http://www.BlackSmithCoke.com)  
Mobile: 678-360-3521  
email: [lbrandforgecoke@gmail.com](mailto:lbrandforgecoke@gmail.com)

**Chile Forge-** Next generation gas forges  
[www.chileforge.com](http://www.chileforge.com) David Starr 520/360-2141

**Kayne and Son** Custom Hardware, 100 Daniel Ridge Road, Candler, NC 28715. (828) 667-8868 fax (828) 665-8303, e-mail: [kaynehdwe@charter.net](mailto:kaynehdwe@charter.net), web site: [www.blacksmithsdepot.com](http://www.blacksmithsdepot.com).

Offering a full line of blacksmithing equipment. We ship and accept Visa and Mastercard.

**D.L. Schwartz Co.** Blacksmith and Farrier supplies. 2188 S. US 27, Berne, IN. 46711, 1-800-955-3064

**USA Dealer** for REFFLINGHAUS ANVILS, 77 to 1250 lb. European 2 horn with or without upsetting block & side shelf. Over 100 sizes and styles available. Guaranteed face @ HRC59  
Dick Nietfeld [www.blksmith.com](http://www.blksmith.com) Phone (308) 384 1088

### **Custom T-shirts**

Contact Heather & Jon McCarty if you are wanting custom t-shirts with your logo. We are able to produce custom vinyl, screenprint, or sublimated products. Contact us at [hmcrafty@gmail.com](mailto:hmcrafty@gmail.com) or 636-359-1232. visit us on FB at **Craf-Tee Creations**

### **Wanted:**

**Blacksmith business cards.** I would like to put together a collage of Blacksmith business cards. Bring them to a meeting or mail them to me with your dues. Bruce Herzog 2212 Aileswick St. Louis, MO 63129

### **Demonstrator List**

Fred Weisenborn has started a list of members available for demonstrations, fairs, historic events, and festivals, etc. 417-589-2497 e-mail: [jweisenb@llion.org](mailto:jweisenb@llion.org)

**Around the Anvil** BAM has its very own E-Mail news group. If you would like to participate there is a sign up link on the [bamsite.org](http://bamsite.org) or send an E-Mail to Terry Humphries at [thumphr@south40.org](mailto:thumphr@south40.org) and he will get you signed up.

Ad Policy: Blacksmith related ads are free to BAM members. Personal ads will run for two issues. Resource ads are ongoing at my discretion. Send to [BAMeditor2015@gmail.com](mailto:BAMeditor2015@gmail.com), or call 636-432-4468

**BAM**  
2212 AILESWICK DR.  
ST. LOUIS MO 63129

Please send changes to Bruce Herzog, 2212 Aileswick Dr., St. Louis MO 63129 or e-mail to [bjherzog@charter.net](mailto:bjherzog@charter.net)

For Next Meeting map, see page 23 of this Newsletter.

