

# *The Anvil's Horn*

A Publication of the Arizona Artist Blacksmith Association

Issue No. 185    March 2017



*Rich Greenwood forging a san mai knife at the AABA demonstration in Tucson,  
January 21, 2017*

# President's Message

Another Open Forge (second Saturday of each month at Desert Rat Forge) has come and gone. I had a mix of smiths with various levels of experience and some newbies. I enjoy showing folks the basics of forging and then handing them a hammer and saying “go for it”. It is wonderful to see someone discover the magic of hot iron and a hammer. Open forges, demo, or just bumping into fellow smiths – it is good to be surrounded by friends who understand my addiction and passion for pounding metal. In an effort to help more smiths feed their addiction I will be hosting a gas forge building workshop on April 22. The exact cost is still in the works. You will leave the workshop with a fully functioning gas forge as a super reasonable price. We will make a couple extra forges to donate to iron in the hat. More details to follow.

Until then happy hammering

*Paul Dief*

**Your dues for 2017 are due.  
The AABA secretary will be mailing reminders.  
Please send your membership renewals soon to  
save your Association the mailing expense.**

The cover photo is by Vivvayn Nightshade.

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# Demonstration: Saturday, March 25, 2017

## Grizzly Iron

1329 W. Lincoln St.,  
Phoenix, AZ

### Short demos

### Lots of hands-on forging opportunities

The March demo has been moved to the 25th. Please don't show up on the 18th or Grizz might put you to work! The demo will be hosted at Grizzly Iron in downtown Phoenix. This will be a very hands-on demonstration. We will have multiple demonstrators that will show and coach attendees with several different small projects. Since this demo will be very interactive and we will need room for work and fun, we will not have the bleachers. That means that if you think you'll need it, you should bring a chair.

Projects will include a 2-leaf hook, twisting rebar, faux braid from round bar, a small cowboy hat, and similar things.

- Registration begins at 8:00 AM, the demonstration starts at 9:00 AM.
- Registration fee:
  - \$15 for members
  - \$20 for non-members,
- Tailgating is encouraged. Tailgaters, please consider donating to Iron in the Hat.
- Bring things for Iron-In-the-Hat and Show-and-Tell.  
Don't forget to put your name on anything you bring for Show-and-Tell.
- Lunch will be available on site for \$10. The lunch will consist of a steak sandwich with grilled onions, peppers, and havarti cheese, along with a bag of chips and a drink. Quantity will be limited: first come, first served. If you want to secure your lunch please email [jason@grizzlyiron.com](mailto:jason@grizzlyiron.com). If you miss out, there are many good restaurants nearby.

#### Remember Iron in the Hat

Thanks to all of you who have participated in Iron in the Hat. By purchasing tickets and donating items, you help support AABA events and projects. Items for donation can be a tool, piece of art, something you made specifically for iron in the hat, something you don't need in your shop, a great book, a t-shirt, a hat ... something an AABA member would enjoy.

#### Directions to Grizzly Iron

1329 W. Lincoln St., Phoenix, AZ

- I-10 (via the tunnel) to 7th Ave.
- Take 7th Ave. south to Grant.
- Turn west on Grant to 13th Ave.
- Turn north on 13th Ave. to Lincoln St.
- Turn west on Lincoln St. to Grizzly Iron (on the left.)

More detailed instructions on pg. 4

**As always, safety glasses are required.**

## March demo details

What you should expect:

To have lots of fun, make some cool projects, and get dirty!

What will you make:

We have several projects ready that will blow your mind yet even a beginner can do. We will play with small projects (pictured below, left to right) like Dief's famous twisted 2 leaf hook, the fun of twisting rebar, how to make a faux braid from round bar, how to make cowboy hats, and quite a few others.

What you should bring:

A hammer, tongs, gloves, safety glasses and ear protection

If you would like to use your own, you can also bring a hot cut and/or walking chisel

How else can you help:

We will need extra equipment for this demo. That means we will need extra forges, anvils, and vices.

Let Jason, [jason@grizzlyiron.com](mailto:jason@grizzlyiron.com), know if you are able to bring any of these items. Don't forget to mark your tools so you know which ones are yours!

And as always at Grizzly, there will be plenty of tail gating to partake in. Bring your items or your cash but make sure to show up early!



## Getting to Grizzly Iron Detailed directions

### I-17 from the north

Exit Grant St, head east to 15th Ave, north to Lincoln St, east on Lincoln, the shop is on the right.

### I-10 from the west

Merge onto I-17 South, exit Grant St, head east to 15th Ave, north to Lincoln St, east on Lincoln, the shop is on the right.

### I-10 from the east and southeast

Merge onto I-17 north, exit 7th Ave, head north to Grant St, west to 13th Ave, north one block to Lincoln St, west on Lincoln, the shop is on the left.

### From northeast valley

Take 51 or 202 to I-10, merge onto I-10 west, exit 7th Ave, head south to Grant St, west to 13th Ave, north one block to Lincoln St, west on Lincoln, the shop is on the left.

## Coming Attractions

Our May demonstration is scheduled for Saturday May 20, 2017, at Barry Denton's ranch near Prescott, AZ. The demonstrator has not been scheduled yet.

## Upcoming Classes

Learn the basics of Damascus in one of the one night workshops at Grizzly Iron.

Friday evenings from 5 until 9 pm.

\$100.00 for each workshop, materials included; 50% down to hold your spot.

February 24

March 17

April 14

May 12

Each workshop is limited to 6 students.

Grizzly Iron Inc  
1329 W Lincoln St  
Phoenix AZ 85007  
[grizz@grizzlyiron.com](mailto:grizz@grizzlyiron.com)

Come do a bit more intense Damascus Workshop.

Learn how to stack a billet to obtain a mosaic, how to manipulate the metal to create patterns, and how to etch to obtain the the patterns.

\$475, 50 % down to hold your spot.

March 31, April 1, 2.

Starts at 4 pm on Friday March 31.

Limited to 8 participants

Grizzly Iron Inc.  
1329 W Lincoln  
Phoenix AZ 85007  
[grizz@grizzlyiron.com](mailto:grizz@grizzlyiron.com)



*Open Forge at Sam Rivera's shop in Tucson on January 7, 2017  
(Photos by Vivyayn Nightshade)*

# January Demo Report

Bill Ganoe

*(Photos by Bill Ganoe unless otherwise noted.)*

We started 2017 with a demonstration at Ira Wiesenfeld's shop in Tucson on January 21. That Saturday started out with cold winds and a heavy overcast after a night of rain. The sun did finally come out and warmed things up as the day progressed. In spite of the discouraging weather early in the day, we had over 70 people at this demo. Our demonstrator was Rich Greenwood who forged a San Mai knife. Rich has appeared in two seasons for Forged in Fire and teaches blacksmithing at the Pima Community College in Tucson.

Rich started out by doing a fluxless weld of a piece of W-2 between two pieces of 1095. And he did this in one of Ira's propane forges. He pointed out that it was important to get the billet up to the color of the interior of the forge and then let it soak for 7 minutes. He didn't have a technical basis for the number "7", but "7 minutes" works well for him. He also said that doing a fluxless weld required getting the steel very clean - grind it down to 120 grit - and making sure the surfaces to be welded are absolutely flat. He also noted that a gas forge usually creates a reducing atmosphere. That is important for forge welding - especially fluxless welding.

On the subject of shaping the blade, Rich advised the audience to keep the blade as straight as possible throughout the process. Adjusting as you go is a lot easier than trying to fix things at the end. He also advised forming the point of the blade at the center of the end of the blade then moving the point to one edge of the blade or the other. When forming the

point, he said it was important to draw the corners back along the edges of the knife rather than pushing the corners in toward the developing point on the end of the blade.

When hardening the blade, Rich noted that you have to be careful if you rely only the magnetic transition temperature. Some steels harden best below the transition temperature and some harden best above that temperature. He advised testing some pieces of the steel you are using before hardening your blade. He also said he puts clay on the spine of the blade when he hardens it. He noted that the clay layer must be uniform thickness. The thickness of the clay layer will affect how much heat gets to which parts of the blade. He reported that many people get good results using Rutland High Temperature Furnace Cement.

Lunch was a BBQ potluck at Ira's. During lunch, we were entertained by one of Ira's friends, cowboy poet Gary Hanon.

After lunch, the 2016 Bill Callaway award for Outstanding AABA Member Contributions was given to Terry Porter. Terry is the AABA secretary. Keeping our records and membership lists in good order takes a lot of time and he's been doing it for over eight years. We hope he continues.

After the award ceremony came the usual Iron-in-the-Hat drawing. Several of us were also treated to a demonstration by Meli Engel of solar cookers (heaters) that could be used for heat treating (mainly tempering) steel.



*It was a cold and rainy morning...*



*But it warmed up as the day wore on.*

## January Demo Report (cont.)



*Opening comments*



*Rich Greenwood at the grinder.  
(Photo by Vivvayn Nightshade)*



*Some of Ira's scrap pile. Ira was selling some treasures and giving others away.*



*Advising and encouraging beginners  
(Photo: Vivvayn Nightshade)*



*Everyone got to barbecue their own lunch.*



*Gary Hanon, cowboy poet  
(Photo: Vivvayn Nightshade)*

## January Demo Report (cont.)



*Show-and-Tell  
Ronald Wickland*



*Show-and-Tell  
Peter Sevin*



*Terry Porter won the 2016 Bill Callaway award. He is surrounded by some of the previous winners. From the left: Ira Wiesenfeld, Peter Sevin, Len Ledet, and Ron Kinyon*



*The 2016 Bill Callaway trophy  
(Photo by Terry Porter)*



*Some of the treasures for Iron-in-the-Hat  
(Photo: Vivyayn Nightshade)*

I am honored and very surprised at being the recipient of the 2016 Bill Callaway Award. I joined AABA in 2002, at a demo at Bill Callaway's old shop, and took over as Secretary for 2009, so I'm starting my 9th year as AABA Secretary.

Dan Jennings knows my former boss, and in conversation he found out that I was a Materials Manager, and thought that I would make a good Secretary, i.e., I was good with spreadsheets. The Secretary at the time had expressed a wish to pass the torch. At Camp Verde in 2008 I heard someone call my name. I said "yes" as I turned around. It was Dan and he said, "thank you for saying yes to being the Secretary." Like a deer-in-the-headlights I said "what!!!" It didn't happen exactly like that, but close.

Not being a full time blacksmith, I didn't have a lot of connections to the craft. Being the Secretary has given me a path to be involved in AABA. It has been a lot of fun and I have gotten to know a lot of great people. Thank you to the Awards Committee for thinking of me.

- Terry Porter

# Hints and Tips

## Words of Wisdom from Peter Ross

by Albin Drzewianowski

There is a new blacksmith club forming at Jerusalem Mill, historical site, in Kingsville, Maryland (near Belair). "They had a Hammer-Down" (sic) on Saturday, 8 October. It was a really nice small event, maybe 20 attendees. The featured demonstrator was Peter Ross, of Colonial Williamsburg fame. One of the things he said has had me thinking. Peter said that *"the use of short cuts curtails skill development."* e.g. knowing it is there and using the belt sander in your blacksmith shop leads you to being sloppy about hammering out a round taper for a punch because you know you can clean it up with the belt sander. Peter maintains with good hammer skills, you can round up the taper with the hammer faster than it takes to go over and use the belt sander. Plus now you have the skill for when a belt sander is not available.

*Reprinted from Hammer Notes, the newsletter of the Mid-Atlantic Smiths Association, Fall 2016*

Does this help to explain why beginning (and a few long-time) welders buy a lot of grinders?



*Open Forge at Harold Hilborn's shop in Tucson on February 4, 2017  
(Large photos by Bill Ganoe, smaller photo by Rachel Dawkins)*

## Calendar 2016 - 2017

March 4, 2017	Open Forge	TBA	Tucson
March 11, 2017	Open Forge	Sahuaro Ranch	Glendale
March 11, 2017	Open Forge	Desert Rat Forge	Cave Creek
March 25, 2017	Demo - Mini demos	Grizzly Iron	Phoenix
April 1, 2017	Open Forge	TBA	Tucson
April 8, 2017	Open Forge	Desert Rat Forge	Cave Creek

### Classes at Pieh Tool Beginning/Intermediate Blacksmithing Classes with Gordon Williams.

Gordon has moved to Utah. No new classes are scheduled at this time. Call 928-554-0700 or browse to [www.piehtoolco.com](http://www.piehtoolco.com) for scheduling updates.

### Sahuaro Ranch in Glendale

More things, such as open forges and demonstrations for school children, are being planned at Sahuaro Ranch. Watch for more details and announcements.

### Ride Sharing

Interested in sharing a ride to a far off blacksmithing event to save on expenses or wear and tear on the old truck? Or would you like some company going to an AABA event just up the road? AABA VP Steve Miller is organizing a ride sharing exchange for AABA members. Email your requests or suggestions to [stevemiller.az@cox.net](mailto:stevemiller.az@cox.net)

### Deadline for the May 2017 issue

March 31 is the deadline submitting photos and articles for the January issue of the Anvil's Horn.

Send articles, pictures, etc. by email to:

[editor@azblacksmiths.org](mailto:editor@azblacksmiths.org)

or by regular mail to:

Bill Ganoë, PO Box 40233, Tucson, AZ 85717

### Welcome New Members

Clayton Cowart	Gilbert, AZ
Ryan Anctil	Green Valley, AZ
Patricia DeSpain	Holbrook, AZ
Thomas & Nancy Selby	Maricopa, AZ
Michael Foster	Mesa, AZ
Sheri Dreyer	Phoenix, AZ
Frank J. Christensen	Queen Creek, AZ
Jamie DeRudder	Scottsdale, AZ
Steve Thompson	Scottsdale, AZ
George Barker	Tucson, AZ
Nicholas Fuchs	Tucson, AZ
Nelson H. Hebert	Tucson, AZ
Ian Morgan	Tucson, AZ
David Pate	Tucson, AZ
Tim Meixell	Tumacacori, AZ
Douglas Hayes	Saint Johns, FL
Helmut Hill & Christy Hengst	Santa Fe, NM

### MCC Blacksmithing & Welding

The Mesa Community College blacksmithing program is an excellent deal - over 60 hours of instruction including material and propane! Saturday (Jaime Escobedo instructor) and evening classes (Dan Jennings instructor) are available. Blacksmithing is WLD 103.

TIG, MIG, Arc, Gas, and Art classes are all available, as is certification in any of those welding methods at Mesa Community College, Southern and Dobson in Mesa.

Classes fill up early. For more information go to: [www.mesacc.edu](http://www.mesacc.edu)

### Submit Your Touchmark

Submit a JPEG of your touchmark(s) to Steve Miller, [stevemiller.az@gmail.com](mailto:stevemiller.az@gmail.com), so it can be included in our AABA touchmark registry which will appear on our website soon.

# AABA Website: [www.azblacksmiths.org](http://www.azblacksmiths.org)

## Open Shop: Tucson

There will be hosting an open forge on Saturday, March 4, 2017, from 9 to noon. Details are still being planned.

## Open Shop: Grizzly Iron

Don't have a power hammer? Use one at Grizzly Iron, 1329 W. Lincoln St., Phoenix, 5 PM to 8 PM every Wednesday. \$20 each night. Call Roger "Grizz" LaBrash at 602-716-9660 to sign up.

## If You Are Attending An Open Shop...

You might not be aware but this, but these events are not funded by the AABA . They are hosted by our members for all of our benefit. So if you participate in forging ,welding, use shop materials, or accidentally damaged something. Please offer do donate to help out or help with the cost of replacing a item. Thank you! From all of your open forge hosts. **You will need to wear safety glasses. Hearing protection is recommended.**

## Open Shop: Desert Rat Forge (Phoenix area)

Paul Diefenderfer will host an open forge on Saturday, March 11, 2017, from 9 am to noon, followed by lunch (You gotta' buy your own.) at the world famous Big Earl's Greasy Eats in Cave Creek. Desert Rat Forge is at: 40218 N. 78th St. Cave Creek. 602-509-1543 or [dief@phoenixrockgym.com](mailto:dief@phoenixrockgym.com)

Directions: From the center of Cave Creek (the 4-way stop at Cave Creek Rd & School House Rd.) head north on School House 1.5 miles to Highland Rd. (If you get to the 4-way stop at Fleming Springs you have gone a tad too far.) Turn right (east) on Highland. After about 1 mile the pavement ends. Keep going on the gravel road until the pavement starts up again. Turn right through the stone walls down a paved driveway. You are there!

(Dief will be working some temporary jobs in Florida on and off for the next few months. This will involve travel on Sundays, so he has rescheduled the next several open shops on Saturdays.)

## AABA Membership

Benefits for members include:

- Member discounts at vendors around the state: See page 18 of this issue for more details.
- Reduced registration fees at demonstrations and workshops
- A one year subscription to the bi-monthly newsletter, *The Anvil's Horn*
- Connection to members throughout the state who can answer questions and give advice
- Free classified ads in the *Anvil's Horn* and on the AABA web site.
- eMail notices when event details change or new events are scheduled on short notice.

### AABA New Member and Membership Renewal Form

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____ Email _____
Professional blacksmith _____ Hobbyist _____ Farrier _____ Blade smith _____
Your main blacksmithing interest _____
Occupation or skill _____
Please check one:
Regular membership (\$35) _____
Family membership (\$40) _____

Mail to: Terry Porter  
2310 E. Melrose St.  
Gilbert, AZ 85297

**Make Check Payable to AABA**

# Silent Hammer

Mark Finn

April 14, 1948 – June 8, 2016

By Bill Morris

In 2007 the first meeting of what was to become the “Verde Valley Blacksmith and Lunch Guys” (VVBALG) met at Jim Sheehan’s shop in Cornville to begin work on the AABA Panel Project. Among the attendees was Sedona blacksmith Mark Finn who none of us had met. When it was decided that we would each submit a proposal with some drawings for the panel, it became apparent that Mark was not only a highly competent blacksmith but from the drawings he submitted he was also a talented sketch artist. After we completed the Panel Project Mark was an active member of our group and participated in many of the demos we did in conjunction with the Camp Verde Historical Society.

Mark grew up in Southern California and after seeing the blacksmith shop at a ghost town the family had visited he decided to become a blacksmith. To avert further damage to the back porch, when he was 10 his parents gave him a “real anvil”. He joined the California Blacksmith Association in 1978 and after moving to Sedona the Arizona Artist Blacksmith Association in 1987. He credited his love for art and sense of whimsy to his family’s association with the Walt Disney Studios and took every art class the local community colleges had to offer.

Mark’s professional work encompassed a variety of types of metal art and he became especially adept at iron botanicals which he demonstrated at our 2007 Camp Verde demo. He told me that since he couldn’t grow live plants he filled his yard with steel flowers and a tree. He also was an avid collector of blacksmithing equipment and in addition to his

working shop had a replica smithy adjoining his home.

In July of 2015 Mark advised me that he had been diagnosed with cancer and although responding well to treatment, he was forced to curtail some of his blacksmithing activities. We had lunch several times after that and when I last visited with him in November, Mark had recovered well enough to submit, along with his wife Priscilla, several pieces for the Sedona Arts Center’s “The Art Of Recycling – Turning Trash To Treasure” exhibit. Unfortunately, his long and brave battle ended and he died on June 8, 2016.

Priscilla sent me this from the **Celebration of Life** she hosted:

*“He thrived on challenges as a blacksmith, metal worker, and machinist. He had an extraordinary gift for the creative process and was driven to make pieces that were completely out of the ordinary. His unending imagination and exceptional and decorative pieces of art were truly amazing, as he turned metal into magic. When presented with opportunities to share or teach his knowledge of the blacksmithing craft again, he relished in cranking up the forge. He had a great respect for other artists, genres and their mediums along with the trades people for he knew what it took to create exceptional pieces of work.”*

Mark was a talented and creative blacksmith. He was a friend and will be missed.



Mark's replica smithy



Steel agave



Demo at Bill Morris' shop in Camp Verde

## Call To Artists

### Toscana Studio and Gallery Tucson, AZ

#### *"Feathered Friends"*

A Contemporary Fine Art Show featuring art that represents birds.

Opening Reception April 1, 2017  
**Deadline to submit art: March 8, 2017**

Toscana Studio and Gallery, now 11 years in business, has established itself as a venue for local artists in Tucson to show and sell their work and meet other artists and collectors. This spring 2017 we are offering a Call to Artists to submit art with a Bird/s as the main theme of the piece.

The Show will be on April 1, 2017.

"Birds wild and domestic are quite naturally interesting to humans, earthbound creatures that we are, and for artists and poets in particular, the world of birds and its endless variety of colors, shapes, sizes, sounds and motions has long been an immensely rich source of inspiration, symbol and metaphor. Because they fly, they carry associations of freedom and spirit on their wings. Because they communicate in songs that are alien to human language and yet musically evocative of human feelings, we attribute character and story to them. They are distinctly different from us, and yet we see ourselves in them and use them to consider our own place in the universe."

By Bob Holman & Margery Snyder, celebrated poets.

This is a juried show open to artists in Arizona. The theme of birds must be the focal point, the main message of the piece. All media is accepted for consideration, sculpture, oil, acrylic, watercolor, drawing, pastel, scratch board, mosaics, fabric, ink, mixed media and photography, etc...

Full details are at:

[www.toscanastudioandgallery.com/wp-content/uploads/2017/01/FeatheredFriendsBirdShowProspectus.pdf](http://www.toscanastudioandgallery.com/wp-content/uploads/2017/01/FeatheredFriendsBirdShowProspectus.pdf)

## Interesting Exhibits Coming Up

### **Samurai: Armor from the Ann and Gabriel Barbier-Mueller Collection**

March 1, 2017 - July 16, 2017

Phoenix Art Museum

1625 N. Central Avenue

Phoenix, AZ 85004-1685

(602) 257-1880

<http://www.phxart.org/Samurai>

# Do you really want to put Water on your Fire?

By Dave Smucker  
with a major contribution by  
Tom Troszak

Do you use water on your forge fire?

Well, I don't recommend it if you are using a charcoal or propane forge. However, if you use a coal forge, then that is a different story.

A long time ago Joe Babb, from the Clinch River Group, made the point to me that he noticed that fewer and fewer demonstrators that he watched seemed to use little (or no) water on their coal forge fires. He was wondering why since he always did and was taught that this was an important part of correct fire management. I filed this away -- and said it would make a good future article.

Early this past summer I posed the question on the use of water on coal fired forges to the internet forum of "TheForge" so that I could have some opinions other than just mine. I got a number of good responses - and one very outstanding and detailed response from Tom Troszak from Asheville, NC.

Tom has a long history of blacksmithing and working with coal fired boilers and locomotives. He also has a rather strong technical bent in the understanding of what is happening in our blacksmithing process.

Here are Tom's comments on the use of water in the coal-fired forge.

## What is Coal?

Coal is a coarse mixture of various fuels: most importantly, the carbon in the coke, and the flammable gasses trapped in the coal. Sulfur, peat, oils and other combustible impurities in the coal can also act as fuels, but will be disregarded for the moment. The coke (carbon) is the most important component where heating metal for forging is concerned. Coals are classed according to their carbon content: Anthracite (most carbon),

Bituminous (most common for forging), Sub-Bituminous, and Lignite (least carbon).

## How Coal Burns

The gasses in the coal have a lower ignition temperature in air than the coke (carbon). Some coal with a lot of volatile material will burn by itself without forced draft, just from the combustion of the gasses. This type of fire will not heat metal to a forgeable temperature because the gasses are burning off at a relatively low temperature. On the other hand, some coals have so few volatiles that they will not burn at all without forced draft.

With the addition of atmospheric oxygen from the forge blower, the carbon in the coke becomes incandescent, and the radiant heat from the glowing coke then heats the metal in the fire to a useable temperature. By the time the coke in the coal is blown and heated to a sufficient temperature for forging, the gasses are long gone as "steam, smoke, or flames. The steam, smoke or flames do not heat the metal.

In the heap of green coal surrounding the fire itself, the radiant heat from the fire (and some escaping heated air) begins to drive off, or "distill" off the volatile gasses, which, if heated to combustion temperature, become large romantic flames that heat the smith, but not the work.

## What Does Water Do?

Wetting the green coal does several things, but most importantly, it keeps the carbon (coke) in the green coal below its combustion temperature while the more volatile gasses are being driven off. That way, the all-important coke is preserved from premature combustion while the distilling of gasses is taking place. When the gasses are gone, the coke is ready to be raked or pushed into the heating portion of the fire.

The presence of water in the green coal immediately surrounding the fire also keeps some of the gasses from reaching combustion temperature, so that they boil off in the steam, rather than creating unpleasant flames. Whether you steam off or flame off the gasses is largely a matter of preference, but you generally get more useable coke for heating your metal if you keep the surrounding green coal below the combustion

> Continued on page 15

temperature of the coke. You get less flame and smoke if you keep the rapidly departing gasses below their combustion point.

The cost of BTUs absorbed in the vaporization of the water is completely insignificant compared to the BTUs preserved by preventing the premature combustion of the coke. The water (and the gasses) in the green coal are being boiled away by the stray radiant heat that escapes from the center of the fire, heat that is not doing useful work anyway.

### **Does the Type of Coal Matter?**

The amount of water necessary to produce the maximum quantity of usable coke varies widely with the quality of the coal, and the size of the coal particles. Some fine, high carbon coals burn well almost dry.

The more carbon (and less gasses) in the coal, the less water generally will be needed to keep the coking process under control. Coal with more carbon and less gasses is (in general) "better" for forging purposes, ignoring the melting temperature of the slag for a moment. If you just buy coke already made, you don't need any water at all, except perhaps to keep the fire from spreading too much, but you have to blow it continuously, or it goes out pretty fast. Pure metallurgical grade coke is my forging fuel of choice, and charcoal second.

Finer coal particles help keep the hot (burning coke) portion of the fire contained, and less draft air escapes through the surrounding green coal, so that the fire spreads less readily, and the available air blast is more effective. If the coal is too coarse, enough blast air can escape through the loose pile to make it difficult to reach forging temperature. The coarser the coal, the more wetting and packing may be necessary to keep the fire hot and contained.

### **Ok, let's talk about clinkers.**

Coal comes from carbonaceous materials in the ground, it is comprised of things such as old trees, grass (peat) and dinosaurs<sup>3</sup>, and contains a more or less percentage of dirt (ash). This dirt (ash) is comprised of a fantastic variety of materials, but

largely silican, minerals, etc... you know, dirt.

In the high temperature of the forge fire, this dirt mixture forms a very crude glass or slag known as clinker. Some rare forms of dirt (like pure silica) may have such a high melting point that they are not a melting problem at forging temperatures, but these are not often found in coal, so the best way to prevent clinkers from forming is to obtain coal without so much dirt (ash) in it in the first place.

All coals contain some ash (dirt), but whether it becomes problematic during forging depends on the melting temperature, friability, etc. Some clinkers are sticky, some are not. Some coals may be dusty grey, have 20% by weight of ash, and only 50% of carbon, but forge very well because the clinkers do not clump. Some coals are very shiny black, very little ash, a rating of 15,000 BTUs per pound, a high price tag, and immediately turn to a sticky mess at forging temperature. Most coals are somewhere in between.

The free coal that comes from the stoker bin in the old farmhouse may be fantastic or horrid for forging. The only way I know to tell is by trying it for a couple of days. Some coals may work OK at "forging" temperatures, then become sticky when blown to "welding" temperature.

Clinkers are caused by dirt mixtures being exposed to temperatures above their melting point in a forge fire, not by the apprentice who doesn't hold his jaw right, too much stirring, or by the phases of the Moon. You can't "cause" clinkers by improper treatment of the coal. You CAN prevent

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*This article was reprinted from the January 2017 issue of the "Forge", the newsletter of the Vancouver Island Blacksmith Association. It was (apparently) originally published in the June 2005 issue of the Appalachian Area Chapter of Blacksmiths (AACB), but the last bit of the original article seems to have been lost. Still, it was felt that AABA members might find this material useful in 2017.*

*This article was reformatted to improve readability.*

**LEARN HOW TO MAKE YOUR  
LITTLE GIANT POWER HAMMER  
WORK HARDER THAN EVER!**

Please join us March 10-11, 2017 for our annual Little Giant Rebuilding Seminar!

This class was first taught by our good friend Fred Caylor of Zionsville, Indiana. We carry on his tradition of teaching how to make Little Giants run well and hit hard.

This 2 day class is a hands-on format. You will help transform a 25 LB Little Giant hammer from functional but sloppy condition into a well tuned, quiet, hard working hammer. Sid Suedmeier, owner of Little Giant, will share all his knowledge and experience gained from working with Fred and from 25 years of repairing and rebuilding Little Giants.

An old style 25 LB Little Giant will be rebuilt during the class, and a new style machine will be on hand to demonstrate proper assembly and adjustment of both styles.

The class is held in our shop in historical Nebraska City, Nebraska. The city has a wide variety of cafes, outlets (including Pendleton Woolen Mills), antique and gift shops, orchards, wineries and museums.

**IF YOU HAVE A LITTLE GIANT, THIS  
CLASS IS FOR YOU!**

No experience is required to attend this class. Past students have ranged from age 15 to 90, and from all walks of life. Anyone who wants to learn will benefit from this class. We approach the rebuilding process using tools that can be found in the average home workshop.

If you are in the market to buy a power hammer, this class will make you an educated shopper. If you already own a Little Giant, or any other brand of power hammer, this class will teach you how to get the best performance possible.

The class costs \$95, refundable up to 7 days prior to the class; advance registration is required. We limit the class to 25 participants. The class starts at 9 AM sharp on Friday, and usually ends by Saturday evening. We will be available on Sunday until noon in case we encounter any exceptional problems in rebuilding, and to answer remaining questions.

When we receive your registration, we will send you a city map, along with travel and hotel information.

Airports are located in Omaha (45 miles north), Lincoln (50 miles west) and Kansas City (125 miles south).

**2017 REGISTRATION**

Name: \_\_\_\_\_  
Business name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email address: \_\_\_\_\_

**PAYMENT**

- Check enclosed
- Visa
- MasterCard
- Discover
- American Express
- Number: \_\_\_\_\_
- Expiration Date: \_\_\_\_\_
- 3 or 4 Digit Code on Back: \_\_\_\_\_

**POWER HAMMER INFO**

Brand: \_\_\_\_\_  
Size: \_\_\_\_\_  
Serial Number: \_\_\_\_\_

*Please call or email if you have any questions, or prefer to register by phone. You can reach us at 402.873.6605 or Sidshop@windstream.net.*

*Little Giant is located at 420 4<sup>th</sup> Corso, Nebraska City, NE 68410.*

Never been a member of ABANA?

You could get a free copy of Francis Whitaker's book, *My Life as an Artist Blacksmith*, if you join soon.



# Artist-Blacksmith Association of North America

We are excited to announce our 2017 membership campaign drive. As a gift to a first time member we will award (while supplies last) a copy of Francis Whitaker's book, *My Life as an Artist Blacksmith*. ABANA is widely recognized as the preeminent organization of blacksmithing in the world. Visit us online at [www.abana.org](http://www.abana.org) and like us on Facebook and Twitter.

Blacksmithing, the cornerstone of all crafts for centuries, has come back to life. Once rendered nearly obsolete by the Industrial Revolution and 20th Century technology, this ancient craft has undergone a contemporary renaissance. A new appreciation of the honest, enduring qualities of forged metal has developed.

At the heart of this revival has been the Artist-Blacksmith's Association of North America, Inc., a non-profit educational association dedicated to the dissemination of knowledge about the art and craft. Started by a handful of isolated blacksmiths in Georgia in 1973, ABANA now serves nearly 4,000 members.

As part of your Membership Benefits you will receive 4 issues of the Anvil's Ring and 4 issues of the Hammer's Blow Magazine each year you are a member. These magazines can not be subscribed separately but are only received by our members. We have recently added a youth membership at a reduced rate, this membership available to those 18 or under includes a subscription to only the Hammer's Blow magazine.

## ABANA New and Renewed Membership Form:

Name: \_\_\_\_\_ Membership ID# \_\_\_\_\_  
 for renewals, if known. (Not required)

Street: \_\_\_\_\_ City: \_\_\_\_\_ State/Prov: \_\_\_\_\_

Zip/PC: \_\_\_\_\_ Country: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_

Email: \_\_\_\_\_ Website: \_\_\_\_\_

New

Renewal    Type \_\_\_\_\_ Amount \$ \_\_\_\_\_

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_ CVVS \_\_\_\_\_

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Membership Rates		
Type	1 yr	2 yr
<b>Regular</b>	<b>55.00</b>	<b>105.00</b>
Senior	50.00	95.00
Foreign	65.00	125.00
Student(Full Time)	45.00	85.00
Youth (18 and Under)	20.00	
(Hammer's Blow Only - Non Voting Member)		
Contributory	150.00 and UP	
Educational Institute	250.00	

**ABANA Affiliate:** \_\_\_\_\_

Credit card orders can be faxed, be sure to sign this form. Fax: 423-913-1023  
 Mail to: ABANA, 259 Muddy Fork Rd, Jonesborough, TN 37659 USA  
 (Please pay by Check, U.S. Money Order or Credit Card)  
 Phone: 423-913-1022 or join online at [www.abana.org](http://www.abana.org)

*The Arizona Artist Blacksmith Association is an affiliate of the Artist-Blacksmith Association of North America.*

# Classifieds

Classified ads are free to members and can be submitted by email to: [editor@azblacksmiths.org](mailto:editor@azblacksmiths.org). Ads will run for 3 issues. You can renew your ad if you need to run it after the third issue. Please let the editor know when you no longer need to run the ad.

**Will buy your unwanted**  
blacksmith or horseshoeing tools  
and supplies.

Barry Denton, 928-442-3290 any  
day before 7:00 pm.

## For sale

Propane forge, 2-burner, made in  
one of Doug Kluender's forge  
workshops.  
Miller Dialarc 250, power source  
for TIG or stick with cables,  
remote foot control, argon bottle  
and regulator  
100 lb. anvil  
Hand shear

Jack Friehe, 623-466-9889

## Wanted to Buy: Acorn Table

I am looking for an acorn table. I  
would prefer a 5' x 5' but I am  
flexible. Please email  
[dhallikainen@gmail.com](mailto:dhallikainen@gmail.com) if you  
have one available. I am located in  
Phoenix, but willing to drive.

## Coal for Sale

Dragonforge Ironworks has bulk  
coal for sale. \$25 per 50lbs.  
Minimum order \$100. Small orders  
can be filled at our shop in Mesa.  
Larger quantities available up to 1  
ton but are located at the  
Superstition Mountain Museum in  
Apache Junction.

Really great forging coal from the  
King Coal Mine in Colorado. Bulk  
only, chunk sizes vary from pool  
ball to bowling ball. Bring your  
own 5 gallon pails, 3 pails equals  
about 100 lbs.

Call Michael at 480.529.0206.

## Marketing Assistance

Blacksmith's Wife Marketing provides  
marketing and promotional services, in  
both digital and print, to the metal  
working community. Also providing  
website design and consulting services.  
Contact April Witzke at  
(575) 535-4766 or visit  
[www.blacksmithswifemarketing.com](http://www.blacksmithswifemarketing.com)

## Advantages of AABA Membership

IMS has offered AABA members two great opportunities. Thanks to members Doug Kluender and Wade Smith for the idea and contacts with IMS.

1) IMS has space for member metal work to be put on display in a glass case and on top of the cut metal rack inside the store. Contact Steve Miller, [stevemiller.az@cox.net](mailto:stevemiller.az@cox.net), to get your items on display. These items may be for show only or they may be offered for sale. Artists are responsible for any financial exchange. IMS will make a nice card to identify the piece, the artist, and the cost.

2) IMS is offering a 10% discount to AABA members. The discount is available at the Phoenix and Tucson stores. At the time of purchase tell the clerk you would like the AABA discount and provide your name and address. They will verify your membership with the list AABA supplies.

Don't forget that AABA members get discount pricing at the Vern Lewis Welding Supply stores in the Phoenix area.

# Classifieds

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Please let the editor know when you no longer need to run the ad.

## For Sale

Bridgeport M Head Vertical Mill with cheryring attachment for chisel shaping. Original vise, Van Norman Rotary Table 32 X 9 with autofeed x-axis. Three phase with VFD or 110/220 single phase . Multiple attachments: 90 degree quill adjustable, quill master MNT M2 tapered collets, end mill adapters, hold down set and lamp included . Weighs approx. 2000 lbs. \$3000.

[HancockShopSale@gmail.com](mailto:HancockShopSale@gmail.com)

## For Sale

Titanium Tongs - All sizes and shapes, 50 pairs. Get them while they last. \$100 per pair. Bernhard Heer, 715 205 8786

**Forging Coke for Sale!**  
High quality L-Brand coke  
\$30 per 50 lb bag

Rodger or Jason, 602-716-9660

## Picture Rock

### Arizona Sierra Banded Sandstone

makes the perfect base for all your forged iron pieces. Awards, plaques, memorials, water features, furniture or anything you can imagine.

Mined in northeastern Arizona, cut and shaped to your specifications.

Terry Horne  
500 E. 38th Ave.  
Apache Junction, AZ 857119  
602-672-7085  
[www.arrowzonastoneworks.com](http://www.arrowzonastoneworks.com)

## Sources

### AZ Tool Steel

520 S. 52nd Street #201  
Tempe, Arizona 85281  
Phone: 480-784-1600  
Toll Free: 877-795-1600

### Bar U Bar Supply

Several 65 lb. & 85 lb. swage blocks for sale. Your source for anvils, post vises, and other new & used blacksmith tools.

Barry Denton. ph 928-442-3290  
email: [barubarranch@gmail.com](mailto:barubarranch@gmail.com)  
[www.barubar.com](http://www.barubar.com)

### General Insulation

High temp insulating materials, bricks, Kaowool and other refractories.  
3330 W Papago Street, Suite A  
Phoenix, AZ 85009  
Phone: 602-944-2249  
Toll-Free: (844) 866-1680

### IMS

Full service supplier of steel, stainless, brass, aluminum, copper. Discounts for AABA members.  
5150 S. 48th St., Phoenix  
602-454-1500  
3757 E. Columbia St., Tucson  
520-441-5900

### Interstate Steel and Salvage

Specializing in Steel, Aluminum, Stainless Steel, Brass, Copper and some alloyed metals of all types, sizes and shapes. Cutting, Shearing and advanced Flow water jet cutting for all your project needs. Valley wide delivery. Let us quote your next large or small job!  
12129 W Peoria Ave, El Mirage  
602-944-2000

### Old Globe Reclaimed Wood Co.

Wrought iron.  
PO Box 42101, Plymouth, MN 55442  
715-718-4410 or 952-463-8392 (c)  
<http://www.oldglobewood.com>  
Discounts for ABANA members.

### Pieh Tool Company, Inc.

Blacksmith Supplies, Blacksmith Classes with Gordon Williams, Milwaukee, Wilton & JET Tools,. Air Hammers, Hand Hammers, Tongs, Books, Coal and Coke.  
661 Howards Road, Suite J,  
Camp Verde, AZ, 928-554-0700  
and  
28255 N Tatum Blvd. Suite 1  
Cave Creek, AZ, 480-626-0924  
[www.piehtoolco.com](http://www.piehtoolco.com)

### Say-Mak Power Hammers

Helmut Hillenkamp  
2873A Industrial Rd.  
Santa Fe, NM 87507  
[www.saymakhammers.com](http://www.saymakhammers.com)

### Tucson Iron and Metal

Steel, aluminum, stainless, copper and brass for sale by the pound. Open Monday - Friday 8 - 4:30. Also 1st and 3rd Saturdays 6:30 - 8 am. specifically for metal artists.  
690 E. 36th St., Tucson  
520-884-1554

### Vern Lewis Welding Supply

Discount pricing for AABA members. Various locations in the Phoenix area.  
602-252-0341  
Dan, 602-316-4140, for tech support.

Arizona Artist Blacksmith Association  
Attn: Bill Ganoe  
P.O. Box 40233  
Tucson, AZ 85717  
Address Service Requested

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**The Anvil's Horn** is the official newsletter of the Arizona Artist Blacksmith Association. Published every other month preceding the bimonthly meetings of the Association, the newsletter is oriented toward anyone interested in blacksmithing and related forms of metal work. Membership is available at the rate of \$35 for individuals; \$40 for families and includes a subscription to the *The Anvil's Horn* for one year. Every attempt has been made to ensure accuracy of information appearing here, but no liability is assumed by the Association, its officers or editor for errors, damages, or injuries resulting from any design, use, construction or application of said information. Uncopyrighted material may be used freely by other similar organization provided proper credit is given. Any copyrighted articles appearing herein should not be reproduced without permission of the author. Matters relating to newsletter submissions, corrections, etc. should be addressed to the editor: Bill Ganoe, P.O. Box 40233, Tucson, AZ 85717, Tel: 520-326-5478, or [editor@azblacksmiths.org](mailto:editor@azblacksmiths.org).

For membership information or address change, contact: Terry Porter, 2310 E. Melrose St., Gilbert, AZ 85297, 480-988-2070, [trp555@prodigy.net](mailto:trp555@prodigy.net)

**If you haven't renewed your membership for 2017, the AABA secretary will be mailing you a reminder. Please renew your membership as soon as you can to save your Association the mailing expense.**



*Open Forge at Dief's shop in Cave Creek on January 14, 2017*