February 2019

THE FORGE FIRE

The Newsletter of the Indiana Blacksmithing Association, Inc.

An Affiliate Of The Artists-Blacksmiths' Association of North America, Inc.

IBA is a Not For Profit Indiana Corporation recognized by the IRS under section 501(c)(3)

9:30 AM is the regular meeting time for IBA Hammer-Ins
with beginner training available at 9:00 AM.
PLEASE MAKE SURE TO ASK FOR HELP!

If you would like an IBA membership application form, please contact Farrel Wells, Membership Secretary (765) 768-6235.

BULK LOTS ARE AVAILABLE TO DEMONSTRATORS,
SHOPS, SHOWS AND OTHERS WILLING TO MAKE THEM AVAILABLE.
WE APPRECIATE YOUR HELP.

The Forge Fire is the newsletter of the Indiana Blacksmithing Association Inc. (IBA) IBA is an affiliate of the Artist-Blacksmiths Association of North America Inc.

More nearby resources and organizations for blacksmiths:

Rural Smiths of Mid-America:
Meetings are on the first Saturday of each month
Call Ron Gill
317-374-8323 for details

IBA MEETING SCHEDULE

Check the latest *Forge Fire* for monthly **IBA** revisions.

Feb 16 2019	**KEN DETTMER'S SHOP COLUMBUS**
Mar 16 2019	**BUSINESS MEETING**
Apr 20 2019	**TBD**
May 18 2019	**TBD**

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Dates to Remember

March 9
Celebration of Life of Clifton Ralph

March 16
Annual Business Meeting at Kelley Farms

April 28
Memorial for Charlie Gruell

May 31—Jun 2
IBA Conference

Editors Message

The IBA lost another longstanding member. Charlie Gruell passed away in January. A memorial service will be held at Kelley Agricultural Historical Museum on Sunday April 28 at 2:00.

As noted in last month's Forge Fire a celebration of life service for Clifton Ralph will be held on March 9th at Knights of Columbus Hall, 1400 S Broad St, Giffith IN. The service begins at 1:00 EST/12:00 CST. A luncheon will be served. Please RSVP number of attendees to conz@comcast.net or text to 219-929-5488 or directly respond in the Facebook link: https://www.facebook.com/events/2211150895874105/

Two IBA satellite groups have closed. The One-Armed Blacksmiths in Columbus and the Doc Ramseyer shop in Sharpsville are no longer meeting. I have updated the list of satellite groups on the next page. Note that Satellite 13 is still #13 on the list even though there are only 12 satellite groups. Some of the contact information may be obsolete. Forgemasters, please notify me if the hammer in dates or contact information should be corrected.

On happier news, I understand the St Joe Forgers hosted a pretty good hammer in last month. Attendance was limited due to the polar vortex/ snowmageddon weather conditions. Reports indicate a good hammer in was had none-the-less.

Our February hammer in will be hosted by Ken Dettmer in Columbus. This is always a great hammer in with big attendance. Be sure to come early and get a good seat.

The March IBA event will our annual business meeting. The ballot of candidates running for board of directors is posted on page 5. We have 3 announced candidates for 2 spots, so your vote matters. Be sure to vote and get the ballot mailed in time to be counted.

The Rural Smiths March meeting will be at Conner Prairie.

Last April the IBA was invited for a day at Sanderson Iron Works in Quincy, MI. Joel Sanderson gave us a fabulous tour and demonstration in his shop filled with running line shaft driven equipment. A television station created a half hour video on Joel Sanderson's shop. The video can be viewed at: https://jtv.tv/where-we-live-sanderson-iron/

On a closing note Dominick Andrisani recently announced the IBA Facebook page has over 1600 members. The success of the page speaks for itself. Thank you, Dominick, for creating this page for us. The Facebook link is listed below.

IBA website: www.indianablacksmithing.org IBA Facebook page: www.facebook.com/groups/IndianaBlacksmithingAssociation/

IBA Satellite Groups and News

1) Sutton-Terock Memorial Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contacts: Fred Oden (574) 223-3508
Dennis Todd (574) 542-4886

2) Jennings County Historical Society Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contact: Ray Sease (812) 522-7722

3) Wabash Valley Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contacts: Doug Moreland (217) 284-3457
Max Hoopengarner (812) 249-8303

4) Fall Creek Blacksmith Shop
Meet: 4th Saturday at 9 AM
Contacts: Gary Phillips (260) 251-4670
Dave Kline (765) 620-9351

5) Maumee Valley Blacksmiths
Meet: 2nd Saturday
Contacts: Clint Casey (260) 627-6270
Mark Thomas (260) 758 2332

6) St. Joe Valley Forgers
Meet: 4th Saturday at 9 AM
Contacts: Bill Conyers (574) 277-8729
John Latowski (574) 344-1730

7) Rocky Forge Blacksmith Guild
Meet: 2nd Saturday at 9 AM
Contacts: Ted Stout (765) 572-2467

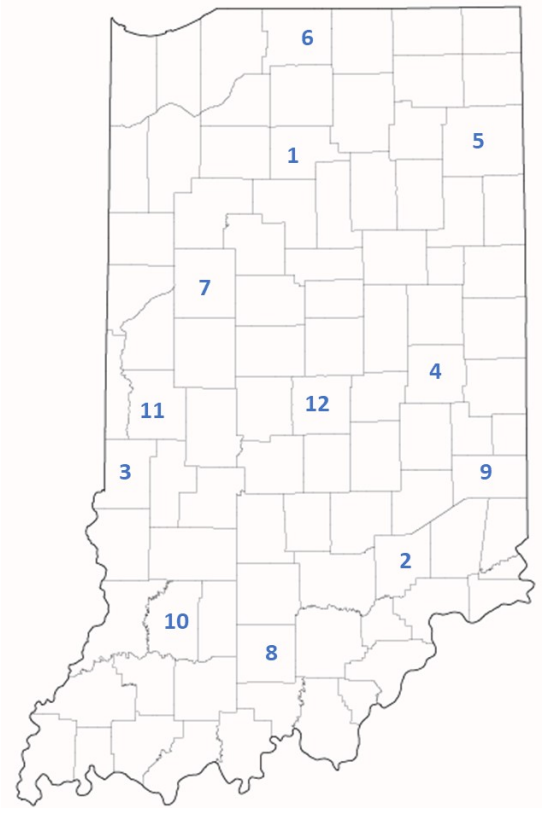
8) Meteorite Mashers
Meet:
Contacts: Mike Mills (812) 633-4273
Steve King (812) 797-0059
Jeff Reinhardt 812-949-7163

9) Whitewater Valley Blacksmiths
Meet: 2nd Saturday
Contact: Keith Hicks (765) 914-6584

10) Bunkum Valley Metalsmiths
Meet: 1st Saturday
Contacts: Jim Malone (812) 725-3311
Terry Byers (812) 275-7150
Carol Baker (317) 809-0314

11) Covered Bridge Blacksmith Guild
Meet: 1st Saturday
Contact: John Bennett (812) 877-7274

13) Satellite 13
Meet: 4th Saturday
Contact: Bill Newman (317) 690-2455



Jennings County Historical Society Blacksmith Shop

The Jennings County Historical Society Blacksmiths January meeting was at the forge of Paul Bray in Seymour. After much fellowship, the forge was fired up and Dave Good was kind enough to put on a great demo for us. He made a forge rake/ poker with a pineapple twist handle and a knob on the end. Anyone would have been proud to take it home with them. Brad Weaver took a few minutes off from his busy job to come over and help with the iron in the hat. A lot of really good stuff was on the table, and substantial amount of tickets were sold. Next month we will meet at Kenny Dettmer's forge. Also the following week, the State Meeting will also be there. March meeting will be at Kevin Welsh's . April brings us back to Vernon (no April Fool intended). Don't forget to bring lots of good stuff for iron in hat and money! Paul Bray

IBA Satellite Groups and News (continued)

Meteorite Mashers

The meeting was held at Jeff Reinhardt's shop in Floyds Knobs. The wood stove was started at 6:00am to warm the shop as the temp's were pretty bitter. By meeting start the shop was much nicer, and we had several demonstrations. Jeff made a copper hair Barret with brass pin that Amy Hampton took home. Butch Sparks and Jeff made a bull's hoof foot for a fit pit Butch is building.Micheal Mills did a great job teaching the beginners. Lunch was Jeff's bean soup, Cathy Mills's taco soup and a great desert the Amy Hampton made. Everyone was well fed and the meeting ran till 8:30pm.

Next meeting will be at Dave Kunkler's shop in Branchville unless the weather is icy or snow as Dave has a quite difficult driveway. If weather is bad then Jeff Reinhardt will host.

Bunkum Valley Metalsmiths

The Bunkum Valley Metalsmiths met Saturday February 2nd. The weather was great and we had a big group of men, women and kids. We had a special visit from Bill Newman who stayed busy at the forge making ulu knives. There was plenty of forging including knives and crosses, story swapping and teaching. Many of the ladies were busy crafting with wood burning, drawing and painting. A thank you to Randall for his donation of a beautiful copper rose that was raffled. We had a big pitch in lunch of delicious food. This is a good group of people willing to teach or help. Everyone is welcome to join us on the first Saturday of the month in Odon.

Ballot

IBA Board of Directors
Vote for 2 Only

___ Aaron Baker

___ Bill Conyers

___ Bill Corey

Write in. _____

(Must be willing to serve)

Send ballot to:

Steve King
1155 S. Paoli Unionville Rd
Paoli, IN 47454

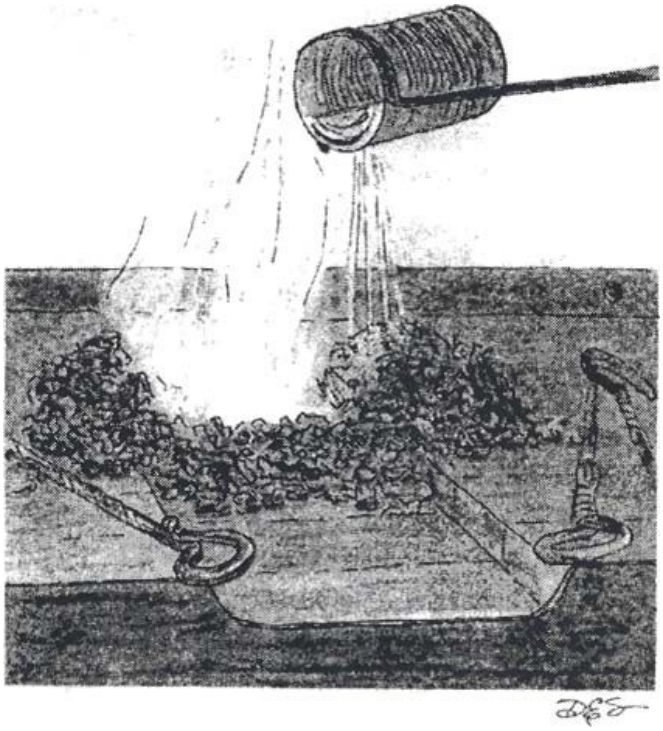
Mark the word 'Ballot' on envelope so it will not be opened until the business meeting in March.

Ballots may be cast at the business meeting.

Mailed ballots must be received by March 15th.

Ballot
Gary Phillips
14800 N SR 167 N
Albany, IN 47320

Steve King
1155 S. Paoli Unionville Rd
Paoli, IN 47454



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 usable 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 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 , and contains a more or less percentage of dirt (ash). This dirt (ash) is comprised of a fantastic variety of materials, but largely silica, 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 25% 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 them entirely by buying "better" coal, or using coke or charcoal.

I have found that "clinkery" coal can sometimes be made to work better if kept very wet, which tends to keep the clinkers solidified, and broken into smaller pieces.

Once, when I had some sticky coal, I put a wide, heavy ring of 1" thick steel plate around the blast hole in my forge, and kept the coal (and the plate) very wet around the fire. Instead of raking the newly formed coke into the center of the fire, I pushed it in from the side with my hands. The relatively cooler ring or plate caused the

clinker to form a solid "doughnut" of glass around the hole, and kept most of it out of the tuyere. Every 45 minutes or so, I would pour a liberal amount of water around the opening, and lift out a perfect ring of clinker with my poker. I would hang these on a hook, just because I could. If I raked the top edge of the "volcano" into the fire, the little free clinkers would melt together over the air hole and shut me down. Getting some good forging coal solved the issue completely.

There are many different kinds of tuyeres, grates and air holes, and they all have their place. Experimentation is the best teacher.

-Tom Troszak

I hope that Tom's comments are useful to you in understanding some of the technical reasons behind using water on your coal fire. Personally, I have long been a user of water having been taught that way by Charlie Fuller - who learned from Francis Whitaker. That in itself doesn't make it right - but I count their long years of experience as an important data point. One other thing is that Francis and others from his generation were very careful about not wasting coal. Coal cost money and it came out of their/your profit.

I was recently listening to one of the last recorded presentations that Francis made in 1999 and he again very strongly made the point to use water on your coal because it gave you a better coke and coke gave you a hotter fire.

I agree strongly with this last point. My personal experience with the coal I use is that I can build and maintain a hotter fire by the use of water and the production of good quality coke, I can then feed this coke into the fire from the side by either pressing it in with my rake or pushing it in with my shovel or a "slice".

Reasons not use to water?

I hear two reasons for not using water on your coal fire. One, is that it wastes BTUs. The other is that if you use water it will crack your cast iron firepot. I think Tom answered the first issue well. If anything, it will save you coal and BTUs in the end. The water controls the fire and helps form good quality coke, "Can't I just use less blast to control the fire and not put so much coal on?" Yes, you can do this and many smiths work this way, but depending on your coal - I think you will find that using a mix of good blast control and effective use of water (not too much, not too little) gives the best overall results.

How about the question of cracking your firepot? Well, if you've got a cheap firepot water will crack it. Nevertheless, it will likely crack by itself all the same. The Centaur Forge pots seem very prone to cracking, I know I have cracked one myself. I believe that the major reason the pots crack is the uneven wall thickness of the pot. It cools much faster in the thin side sections than at the heavy corners and cracks as the pot cools because the thin side cools too fast. The cast iron is weak in tension. As the heavy corners cool they pull on the thin wall sections which are already cool and cracks result. Water may be a factor too if you cool with water at the end of a forge session.

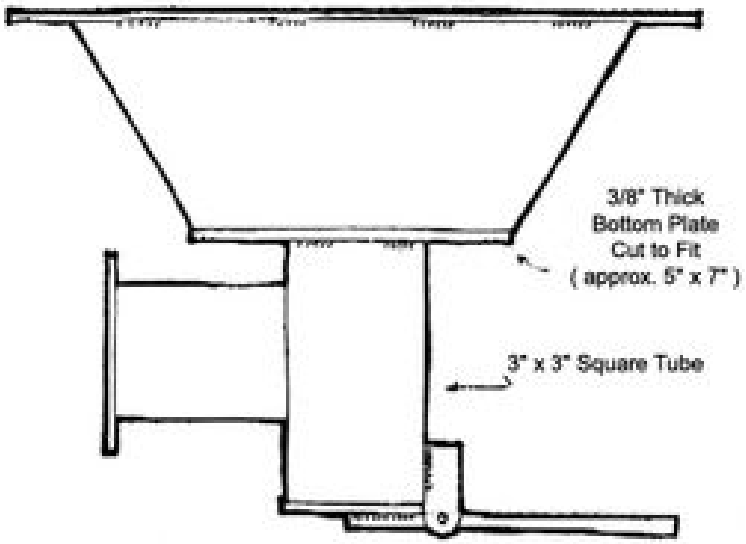
The Laurel Foundry pots, which are much heavier, don't seem to crack at all. The Folk School replaced all of their Centaur Forge pots with ones from Laurel Foundry and they are holding up very well after at least 4 years of hard student service. If you make your own pot using welded construction - "The Lonnie Farmer Design" I don't think it will ever crack. Lonnie's design is repeated at the end of this article.

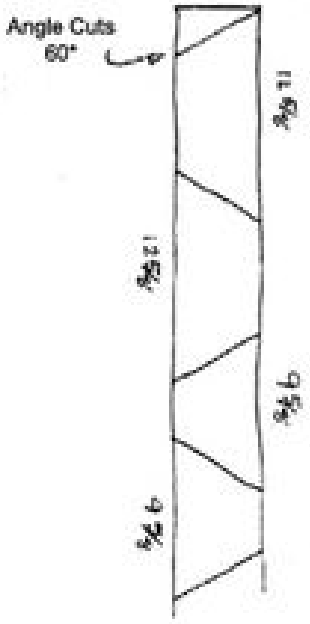
Oh, and by the way, we all introduce water into our forges, charcoal, coal, coke or propane in the draft air. Also in a propane forge, one of the major products of combustion is water, the other being a mix of CO and CO2. However, that's another story for another time.

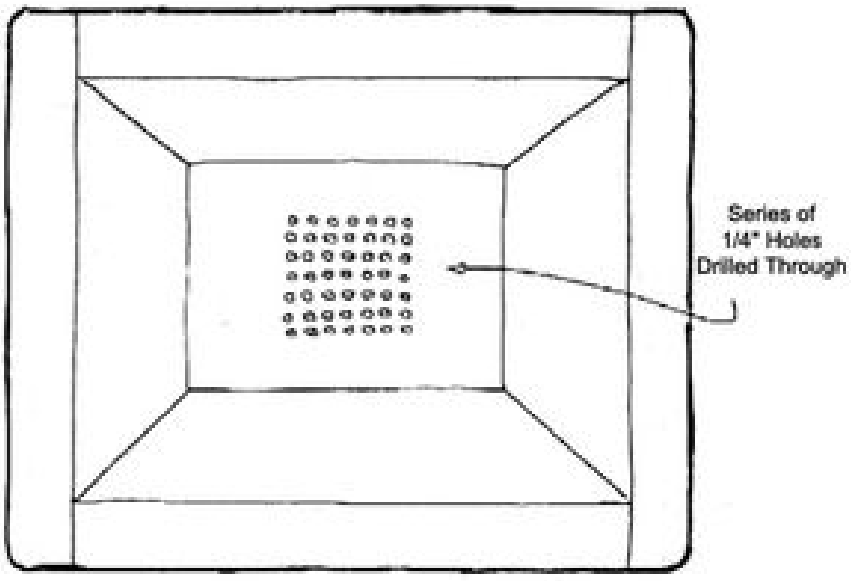
This 3 page article reprinted from The Appalachian Chapter of Blacksmiths, January/February 2005.

Welding Your Own Firepots

Here's yet another idea from Lonnie Farmer. You can weld up your own firepots with a handful of steel and some welding rod. Several of these have been built by Lonnie for the Boy Scout summer camp... Lonnie teaches piles of adolescent boys blacksmithing in July and August... in the sunshine. Last year he lost twelve pounds the first week, and it may have affected his mental state, because he's going to do it again this year. Anyway, the dimensions for this firepot are nominal, and were taken to approximate the Champion firepots we have at the shop. One of the features of those is the use of square tube for the air supply instead of pipe. This makes cutting and assembly much easier. You could cut an optional notch in the sides for long bar clearance, but that would complicate matters somewhat. While these firepots aren't quite as nice as a commercial model... they don't have a clinker breaker... they are cheaper and work fairly well.







This article reprinted from The Anvil's Horn, a publication of the Arizona Artist Blacksmith Association, March 2014

Ask the Old Fart

Photos by Paul Diefenderfer

Hey Old Fart: Why?

Why indeed! That is perhaps the best question you should be asking. Every day. Why? All the time. Why? Little kids ask it all the time (it has been known to drive some parents insane). Most adults rarely ask "Why?" They go about their lives "knowing" things are the way they are "because". Here's a quick example. Quick - draw a bell. Did you draw the basic shape of an upside down "U"? Why? "Because" that is how bells are supposed to be right?

I've made quite a few bells from air cylinders. Cut the bottom off. Make a hook to be inserted through the valve opening and the bell is done. Recently I was going for a different look and cut the top of the tank off so part of the curved area was left. I grabbed the plasma cutter to punch a quick hole in the bottom so I could turn the tank over and hang it - upside down with the opening of the bell still facing down. The steel was so thick my plasma cutter wasn't punching through the steel. After 5 minutes of what should have been a 5 second task I gave up. All of a sudden I asked myself, "Why?" Why does the bell have to hang with the opening down? What if I just set the tank on the ground with the opening up? Then I wouldn't have to make a big stand for the bell. I tried it and the bell rang just fine. Drilled a couple of small holes in the bottom for water drainage and the bell was done except for finishing. I had several of these bells on display during a recent studio tour. As folks were wondering around I would say "Feel free to ring the bells." The most common response was "What bells?" Once discovered, the bells were a big hit.

At the recent demo at my shop I asked every one to sketch a design for a screen door roughly 3ft wide by 8ft tall. The wall around the door was 15 ft tall. There were a wide variety of wonderful designs. They all had one thing in common. All the designs stayed inside the 3ft by 8ft "box" of the door. Why? "Because" that is how we adults think about doors. With 15ft of wall space why not extend the design up and outside the box? I did a mountain scene on the bottom portion of the door and then had an ocotillo with branches extending a couple of feet outside the frame. The client was very happy. They have a work of art with a door in it instead of a door that is a work of art. So, as you ponder the design of your next project ask yourself, "Why?" Don't settle for the easy answer of, "Because."

An air cylinder bell.

An air cylinder bell that is also a candle holder.

The *FORGE FIRE*
Newsletter of the
Indiana Blacksmithing Association, Inc.

Farrel Wells *Membership Secretary*
8235 E 499 S
Dunkirk, IN 47336-8807

First Class Mail

Address Correction Requested
If Undeliverable return to
sender

February 16 Hammer In
Kenny Dettmer's Shop

15721 S 250W Columbus, IN

From the North: take I 65 S to Ogilville / Walesboro (exit 64) turn. right. Go to the 1st cross-roads (300 W). Turn left. Approx 1 mile to the "T' . Turn left (600s). Go to 250W. Approx. 4 miles to a brick house on your left.
From the South: I 65N to Jonesville exit 55 turn. right, go to road 950 (in Jonesville). Turn left. Go to 250W turn. right. Kenny's house is approx 1/2 mile on your right .

Please bring a dish to share.

March 16 IBA Business Meeting

Kelley Farms / Doc Ramseyer Shop

6032 W 550 N Sharpsville, IN 46060

Located just west of US-31. Approximately 6 miles north of SR-28 (Tipton) or 3 miles south of SR-26 (Kokomo).

Please bring a dish to share