New Jersey Blacksmiths Association
"EAGLE"

N.J.B.A. Newsletter

NJBA Volume 7, Issue 2 08/01/02

Editors Soapbox

I hope this finds everyone having the summer of their dreams. Well, hopefully we are all having a healthy and productive summer. Since the last newsletter we have had successful meets at Bruce Ringiers shop in Sussex County, A Saturday meet and a weekend of demonstration at Cold Springs Village in Cape May and as I write this the meet for Monmouth County Fair will be this week. Check the up coming events below and put them on your Calendars. See you soon!
Larry Brown

Upcoming events for 2002

Remember most of our meets have a "Iron in the Hat" drawing, be sure to bring something.
August 10th , 9 am– PABA at David Fishers shop in Hamburg, Pa featuring Peter Renzetti. More details in this page.
September 7th, 10 am – Red Mill Museum, in Clinton , NJ. A hammer-in and blacksmiths tailgate sale. More details on this page.
September 14th– Peters Valley 2nd annual Pig roast, auction and Party. More details on page 3.
October—To be announced
November— Possible meet in Peters Valley, information by postcard or in next newsletter.

PABA Meet in Hamburg, Pa featuring Peter Renzetti

PABA will have a meet at David Fisher's shop in Hamburg Pa on August 10th starting at 9 am. There will be an Iron in the hat and PABA does a trade item, where smiths make an item, bring theirs to the meet and bring home a different one. The trade item for this meet is a C-Clamp.

Peter Renzetti will be demonstrating repose work along with the tools used to do this work. Peter has been a feature at many ABANA conferences and is an excellent demonstrator.

Directions;
Take I—78 to the Hamburg exit and go south to Old Route 22. Take Old Route 22 west about 2.3 miles until you see a gravel lane and a church on the left. Follow down the gravel road to the shop. There should be signs to help.
Shop phone number (610) 562-5425.

Red Mill Museum in Clinton, New Jersey

Adam Howard will be hosting a Hammer - In and tool swap or sale on 9/7/02 at the Red Mill Museum Village, 56 Main Street in Clinton NJ. This event is from 10-4 rain/shine.. Demonstrators, food/BEER, music and tools for sale or swap. If you wish to tailgate please call ahead (908)735-4573. Please bring a side dish and your families, NJBA will be BBQ'ing burgers and hot dogs. Come out and make a day of it!!

Directions;
I—78 to exit 15, go North from exit onto West Main Street. Go to ahead and onto Old Highway 22 making a left on Leigh Street and then make a left onto Main Street. (These directions are from the map on my computer LB)

Remember to send in your renewals!
If you did not get one contact
Nate Pettengill, Membership Chairman
There is a form on the last page of this newsletter

Renewal Time is Here!

If You Have Not Renewed Your Membership Send it in Soon

Rather than use room in the newsletter,
All correspondence between ABANA and NJBA is now being posted

The NJBA Web Site!

The NJBA Web Site is up and running at:

`http://njba.abana-chapter.com/`

Bruces' links to the ABANA site;

http://www.monmouth.com/~freeman/NJBA/abanawebsite.htm

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346 Rt.565 Wantage, NJ 07641
201-652-4526 wlkngb@yahoo.com

Tim Suter, June, 2002
1112 Ladner Ave., Gibbstown, NJ 08027
856-423-4417

Peters Valley
Second Annual Pig Roast and Fund Raiser

On September 14th Peters Valley will hold its second annual Pig roast and fund raiser. Tom Ryan from Long Island City, NY who specializes in architectural work will be the demonstrator. Please bring or send pieces to donate to the auction. There will be sleeping quarters available at the reduced rate of $25 please call the main office at (973) 948-5200.

Directions to Peters Valley;

Directions:

Peters Valley Craft Education Center is located at 19 Kuhn Road. in Layton (Sussex Co.). NJ 07851. (Phone: 20I-948-5200).

From Interstate Route 80 West:

Take Exit 34B to NJ Route 15 North. to US Route 206 North. Left onto NJ Route 560 West. Go through the blinking light in the center of Layton. onto NJ Route 640: go about 2 miles and turn right onto NJ Route 615. Go approximately one mile.

From US Route 209 (on the west bank of the Delaware River in Pennsylvania): Take PA Route 739 South across the Dingmans Ferry Bridge. Take the first right at sign to Peters Valley. Go two miles.

Non NJBA Events in the area

Rough and Tumble Thresherman's Reunion

On August 14—17 Rough and Tumble Engineers will host the Threshermans Reunion in Kinzers, PA. This looks like a huge steam traction and antique tractor show. Call Ernie Reynolds at (717)786-3627 or Bob Reynolds at (717) 442-4539 for a flier with more information or questions about the event.

Early American Wrought Iron Conference Dover, Delaware

September 7 & 8, 2002 Saturday and Sunday, beginning at 9:AM.

Demonstrators will be:

George Martell of Seekonk, Mass. A professional blacksmith since 1984. Will demonstrate jigs and tools used in the layout and construction of circular and straight stairs and gates, also techniques used for cleaning and grinding and joint prep. The use of washes over a base coat to get different finishes on work. How to estimate and price a job.

Richard Sheppard of Bruceton Mills, West Virginia. An artist blacksmith with over 30 years experience will be demonstrating with his Sheppard "Big Lick" treadle hammer. Demonstrating techniques for hot and cold chisel work, slitting square and flat stock, how to pierce holes in square and round stock. Instruction on how to cold cut a beautiful leaf from flat stock, sharing of Repousse' techniques, chisel chased cold work. How to channel for wire in lighting projects, and how to achieve quick and easy tenons. There will be an Auction and Iron in the Hat drawing held on Saturday, don't forget to bring items for either or both. There will also be a table for your display items.

For more information, registration and pricing call

Delaware Agricultural Museum

Phone # 302-734-1618

Ray Noble

Oriole Forge

Manfred Bredhol 1944—2002

On a sad note we recognize the passing of a well know smith, Manfred Bredhol of Aachen Germany. Manfred is know to long time ABANA members as a smith who opened his shop up to many Americans who wanted to work and study in Europe and as a man who helped bring a water supply to a village of African smiths in Togo. He also initiated and organized three "World Congresses of Smiths" and the first Bridge of Friendship to encourage world cooperation.

Blacksmithing Workshops and Classes:

Peters Valley Craft Education Center
19 Kuhn Rd., Layton, NJ 07851 (973)948-5200
pv@warwick.net www.pvcrafts.org
Academy of Traditional Arts
Carrol County Farm Museum
500 South Center St. Westminster, MD 21157
(410)848-7775 (410)876-2667
Touchstone Center for Crafts
R.D.#1, Box 60, Farmington, PA 15437
(724)329-1370 Fax: (724)329-1371
John C Campbell Folk School
One Folk School Rd.
Brasstown, NC 28902
1-800-365-5724 www.folkschool.com
The Blacksmith of Trenton
Alex Parubchenko occasionally gives classes at his shop in Trenton. Please contact Alex or John Chobrda at the shop, Phone # (609) 396-9583.
Red Mill Forge
Contact Adam Howard about workshops and per diem use of the shop (908)735-4573

BLACKSMITH TOOLS FOR SALE!

John Chobrda at the
Trenton Blacksmith Shop
Has a large selection of tools for sale.
Anvils – Forges - Leg Vices
Blowers – Tongs – Hammers
Will also repair and/or resurface Anvils
Call John for prices and availability
Daytime (609) 396-9583
Evening (609) 443-3106

Wanted: Donations for the NJBA Trailer
We need hand tools, files,
Tongs (Old, new and repairable),
Safety Glasses and assorted rivets.
Look around and see what you have to donate.
Contact; Dave Macauley, Directors list, Page 2

Business Members

We would like to thank those who joined with our new Business Membership category
Please show them our support

Ginty's Welding Service, Inc
2 Lee Mack Ave.,Danbury, Conn, 06810

Timothy Miller, Artist Blacksmith,
Bayport, Long Island, NY (631)419-1185

Marshall Bienstock
663 Casino Dr., Howell, NJ 07731
(732) 938– 6577, (732) 780-0871

Lincoln Wolfe
11 Overlook Terrace, Bloomfield, NJ 7003
(973) 338-3913

John Chobrda
Pine Barrens Forge
231 Morrison Ave., Hightstown NJ 08520
609-443-3106 609-396-9583
JChob@earthlink.net

Coal

Coal is now available through Alex Parubchenko at his shop in Trenton. Please contact Alex or John Chobrda at the shop, Phone # (609) 396-9583.

Open Forges

We want to encourage all to join us at:

Monday Night Open Forge in N.J.

Marshall Bienstock is hosting an open forge in his shop at 7 pm almost every Monday night (Please call ahead on holidays to make sure , (732)780-0871)

Monday Night Open Forge In Orange County

Greg Phillips will be hosting an open forge in his shop in Orange Co. NY. For more information Contact: Greg Phillips, Acorn Forge, 937 Route 17k, Montgomery, NY 12549, (914) 457-5672, Suresign@frontiernet.net

Furnace Town Meet
March 16th 2002

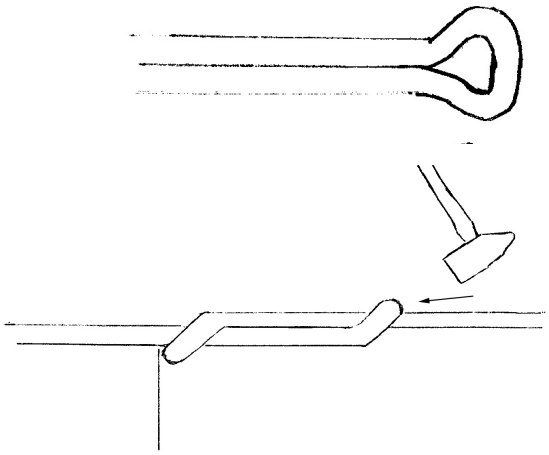
Report and notes by:
Marshall Bienstock and Anton Holstrom

9 AM– Ken Zastro–

- Ken demonstrates leafmaking
- Using a Hoffi hammer
- Talks about proper hammer technique
- Stretches and exercises to prevent injuries
- Covered hole punching and the difficulties with "Pure Iron"

Demonstration — Leaf from 3/8" round
Point over horn, set back end of leaf on step of anvil. Ken cuts using a brass hammer and states that punching a hole in "Pure Iron" is harder because of it's ductility. The punch should have a 20—30 degree taper.

Decorative detail — Square Knot
Using 1/4" round bend loop in middle of 2 rods each 24". The inside of the loops measures 3 times rod diameter. Bend the loops over the edge of the anvil. Slip the ends through the loops and pull and tap the loops toward each other. Reheat and tighten up with hammer. Ken then made a three legged candle holder from the piece.

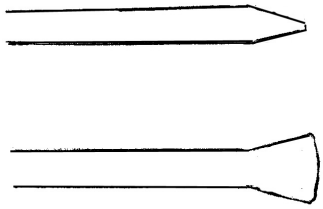


10:15 am—Mike Walker

Demonstrated leaf making and tooling

- Veining tool

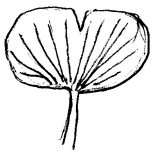
- Use proper size and shape tongs for material used



- Mike used 9" of 5/8" coil spring to make this tool
- Mike makes the handle octagonal
- Keep tool straight
- Hot rasp or grind edges to final shape for the job slightly radius corners to avoid marking work

Demonstration - Ginko leaf

- Mike often uses real leaves as patterns
- 1/8" material for leaf—cuts to shape with a plasma cutter
- Heat leaf and thin edges and sides to give life like appearance
- Vein tool with Veining tool (Above)



- Ginko leaves have veins that radiate from the stem to the outside edges
- Next roll stem into round tube using step on anvil
- Finish; Mike polishes surfaces, runs oxide colors and coats with wax
- Has sold many metal flowers at flower shows

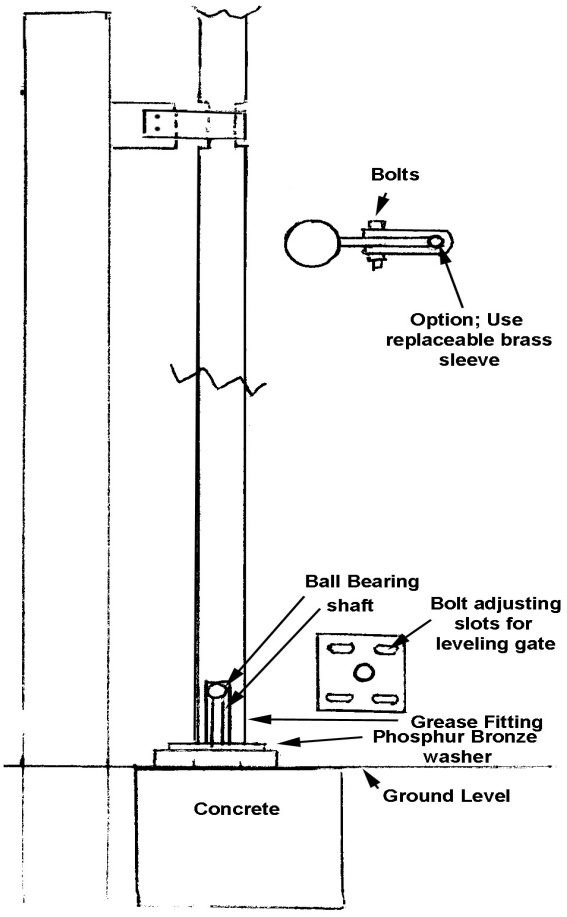
Bob Morris "Teaching Blacksmithing"

Demonstration—
Teaching students to make a Wizard Head
Teaching — Main principles

- Be prepared, a one hour class requires four hours preparation
- Motivate students to retain material taught
- Make a story board of steps in the process
- Teach how to make all the tools necessary
- Bring something to give students such as wizard heads drawings or handouts
- Bob likes two blacksmith books for basics;
  Jack Andrews - New Edge of The Anvil
  Randy McDaniels - The Blacksmiths Primer
- A fire tender takes the worry away about proper

2:30 Nol Putnam
Demonstration #1 How to Build a gate

- Has three gates at the National Cathedral in Washington
- The big jobs are generally got by the presentation.
- He gives the customer 2 blue prints -1 water color and - 1 sample section. The customer must pay for this.
- When you make this gate, make it your style. All Blacksmiths have a style and they are different.
- Always work from full size drawings.
- Go to art store for onion skin paper. The bottom sheet has the outside dimensions and the sheet above is used to sketch. The final drawing on good velum onion skin and print on mylar.
- Over design for safety and less liability



How do you hinge the gate?
Nol hinges into ground. If customer wants anything different they must sign off.
Phosphor bronze thrust washer on bottom, and ball bearing on top of pin.If the gate is going to be used a lot install zerks fitting and grease. 1 1/4" Square bar with 3/4" hole drilled.
Bending the arch, heat in thirds, one side, then the other, then the center.

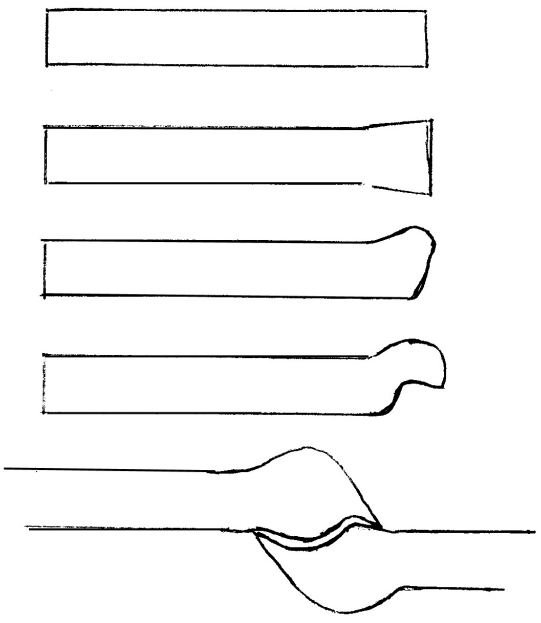
Bookkeeping and timekeeping
How do you price a job? First you need to know the shop rate
Time in shop 8-9 hours
Chargeable time 4,5,6 hours
Days per year/5 weeks off 235 days X 5 hr/ day =1175 hrs/yr
Overhead, gas heat, phone, rent, salary = $6,000/ mo or $72,000/ year
Shop rate = $60/hour
Keep track of overhead
Charge for your work, part timers undercharging kill full time smiths

Example stair railing
Need 55' cap rail, 60 pickets, 6 ballisters, 60 scroll units
Cost ____ X 20%
Keep track of every job, break job down into components keeping track of; Forging, time, materials @ 1 1/2 x's cost, assembly, finishing and installation.

Nols new shop 30 x 35
125# Beaudry with 5x8 dies. If he wants to draw out he places a rounded dye over bottom die.
Jib crane to move heavy objects.
Skylights over anvil and forge.
He keeps a Makita with wire wheel handy.
His hammer is Swedish pattern with the face upset until flat, the cross peen is upset to a larger size
Heat to red and anneal, sand. Temper by heating both areas to red and with bucket of water quench face then peen and continue until warm to touch.
The leaves he makes by hand and uses no dyes, wants the irregularity. He works one side than the other.
Polishing with emery paper.

Grapes are generally made in dies of 3-4 different sizes and gas welded together.

Note: Some Blacksmiths use dyes which are half flat and half rounded. This means they are always forging on one side or the other and this places extra stress on the guides.
Anvil height - wrist high, hammer handle length from holding in hand to elbow.
Anvil horn to right side makes it easier to see when making leaves
Top tool should have 45 degree offset to keep hands from being over hot work or blocking view.
When passing metal always keep hot end towards floor and not up in the air where it can fall and bum someone.
Working metal fast and hard generates molecular action and generates heat.
Architects drawing — all measurements to be taken



from jobsite, do not trust the drawing!

Forming a weld scarf

NJBA Cold Spring Village Meet

Report by David Macauley
NJBA Cold Spring Meeting 6/15 - 6/16/02
NJBA once again participated in the FarmFest event sponsored by Historic Cold Spring Village in Cape May NJ. NJBA provided demonstrators on both Saturday June 15, 2002 and Sunday June 16th. David Macauley dragged the NJBA trailer down on Friday night and was able to drop it off directly next to the blacksmith shop at HCSV. Saturday started with a swarm of Mosquitoes that braved our black smoky fires. Tim Sutter brought down a forge, anvil and stand which was augmented by the NJBA forges, anvils and tools. After erecting the tarp for protection from the non existent sun (at least for Sunday) we proceeded to get two forges going. Many thinks to all those who helped set up and take down our exhibit.
In attendance on Saturday were:
David Macauley and wife
John Chobrda and wife
Tim Suter
Larry Brown
Jerry Goldman
Mike Erdie and family
Tom Eden and family
Mitch Swirsky and significant other (wife?)
Mike Mills
John and Mitch worked on making a flesh fork from stainless steel. Larry and David made some helpers for the forges (small adjustable stands for holding stock in the fires). Tim bought quite a bit of his pieces for display. John' wife sold our new NJBA hats.
On Saturday NJBA hosted lunch at the Grange in HCSV at which time a very brief business meeting was held. All directors who were up for reelection where reelected by unanimous vote. This included:
Bruce Freeman
Anton Holstrom
David Macauley
John Chobrda
Greg Phillips
Tim Suter
On Sunday we had: David, Tim, Jerry, Mike Erdie, Mike Mills and Tom in attendance.

Foundations!

A Resource for Beginners.
by Bud Oggier
the Anvil's Ring/ Winter 1987 Part 8

"Hi, Jean, are you ready to finish up the hardie we started last week? After you left, I heated the hardie up again and put it in my ash bucket to anneal so any forging stresses would be gone. This cuts down the chances of getting any cracks during the hardening process. I left the piece in the ash bucket so you could see what it looked like when it came out. Let's fish it out and take a look. Boy, look at that, it looks like it was scaled up terribly; but be brave, that's just the wood ashes sticking to it. They come right off with the wire brush.. See how easy they come off? Notice there is very little scale on the piece.

Scale is ferrous oxide and forms only when the piece is hot and exposed to oxygen. Since the piece was only in the air for a few seconds before the ashes sealed off the oxygen, there is very little scale. One good reason for not blowing the fire any harder than it takes to the job done is that any unconsumed oxygen that reaches the piece forms scale right in the fire. Keeping a good deep fire is also necessary. Remember one of the first times you were here I told you to put the piece straight into the fire? That was so there would be a good layer of coke under the piece, and that would use up most of the oxygen so no scale would form.

Some other mediums I've used for annealing either stuck on the piece or didn't seal out the oxygen well enough, and the piece was difficult to clean up. The only thing I do to my wood ashes is to sift them through a screen now and then to keep them nice and fluffy, then they seal up well.

Before we harden this let's look it over and be sure there are no sharp nicks, burrs or cold shuts, if there are, now is the time to correct them. this one looks O.K. let's harden it.

While this piece is heating let's talk a little about oil hardening. I've made other tools from this same axle and I know it is oil hardened. Most axles are a 3000 or 4000 series steel; that means the primary alloying element is either nickel or molybdenum. In either case it demands an oil quench; Water would be too severe and would cause cracking. I'd like to point out that my oil tank has about ten gallons of oil in it. I use "used" motor oil; it is not as good as a special quenching oil but it gets the job done for me and it sure is a lot cheaper.

The tank has a hinged lid that is held up by this steel arm. On the inside between the arm and the lid, see this little tin piece? it is called a "fusible link", commonly used in automatic sprinkler heads. Its purpose is that if the oil catches fire, and it can easily, the heat causes the link to melt and the lid bangs down and puts the fire out. When we hardened your chisel we dipped the chisel into the water so there was still some red hot metal above the water, and used that heat to draw the temper after the tip was quenched. When quenching in oil or any other flammable mixture NEVER have any metal above the surface of the oil that is over about 350° or you'll have a fire in a hurry. Get all of the hot metal submerged in the oil and keep it constantly in motion until it is cold. Remember, the reason for using oil is that it transfers heat much more slowly than water; as a result the oil can get very hot next to the metal and boil. When this happens you not only get gas pockets that cause spotty hardening, but you increase the chances of a fire, so keep it constantly in motion. Notice also there are two fire extinguishers (A-B-C) on the wall nearby.

Well, the piece should be getting hot by now, let's look, just needs a little more; I'm going to shut the blower off now and give the heat a chance to even out and soak all through the piece. Now just a touch more blower. I didn't point out that when I put the piece in I put it so the heaviest section was in the middle of the fire and the narrow end away from it. This prevented the thin section from getting too hot before the heavy part was hot enough. Remember the story about grain growth when we hardened your chisel?

O.K., the piece is ready; hold it by the shank

with these box tongs and submerge it in the oil tank. Good, keep it moving, just swing back and forth inside the tank. Hear the oil bubble, even while the piece is moving? The fact that there is very little smoke coming up is a sign that the oil is not getting too hot, and that's good. The bubbling noise has stopped now, so it won't be long before the piece is cool enough.

Once the noise has stopped and there is no more bubbling, raise the piece up out of the oil and put it right back down in. If there was smoke coming off the piece, it is still too hot. See, still a little smoke leave it in the oil another minute or so and look again. This is a good example of how much slower a quench medium the oil is than water; by now in the water tank that piece would have been stone cold.

Let's look again, Jean. See, no smoke; hold the back of your hand close to the piece and see if you feel any heat. No? O.K., let's wipe if off and temper it.

To temper this piece I'll put this bit of iron in the fire to heat while we polish up the blade end on our hardie. Well, that is shined up enough to see the colors run. Now I'm going to put the shank end in the fire long enough to get it dull red, and then lay it on the iron piece in the fire, shut off the blower, and let the heat soak from the iron piece to the hardie. While I had the shank in the fire I was watching the polished end to be sure no colors showed.

I'm going to turn this piece 90° in order to not get any one side too hot. I'll continue to do this until the color in the hardie gets blue and then quench it again in the oil tank. See, the color starts at the end of the hardie; now is the time to watch closely. Even though you keep turning it, if there is too much heat being transferred too quickly you may only get the outside hot enough to temper, but not the middle; so don't rush it; give the heat a chance to soak in. One way you can check this is when the color you want appears, take your polishing stone and shine up a spot. If the color comes back quickly, it's a good indication the heat is through the whole piece.

There, see the blue? Now, I'll shine it up quickly; there, the color came right back, so into the oil again. Now it's cold, so let's clean it up and see how good a job we did. I'll take a mill file and push it across the hardie; good, it just sticks a little; that means we're at just about the right hardness.

In commercial heat-treating they use an instrument to measure the hardness. Two common brands are Brinnel and Rockwell. Both use the same principle, by pressing a precisely shaped piece under a fixed load into the surface being checked, then measuring the depth it penetrates; the harder the piece, the less penetration. The tempering, or drawing, is done in a furnace with a controlled temperature, and the piece is left in the furnace long enough to reach furnace temperature throughout its entire section. We don't have any of that fancy equipment so we have to do it this way. If you're careful and don't rush things the results are about the same.

Here's another way you can heat a piece for tempering: If you have an acetylene torch, use it to heat the shank only, and let the color run up into the blade. You can do this on any tool that fits into the hardie hole since you don't really care if the shank is hard or not. Yet another way: If you have an understanding family, put it in the kitchen oven at 450° for about one hour!!

Well, let's clean this up on the wire wheel, and grind it, then we can see how good a job we did. Jean, I like to grind a hardie so that one side is flat and all the taper is on the other side. This lets me cut off a piece that leaves a straight face. If it has an angle on both sides, then the piece has a tapered face. I have both kinds, but mostly I use the one for straight cut-off faces. I also have one that is almost twice as thick as this one to use on heavy bars, 1 1/2" 0 or larger. The reason it is thicker is so it doesn't heat up quite as quickly and I can usually cut a piece off before I have to cool the hardie.

Don't forget that each time you use the hardie it gets some heat, so be careful not to burn your fingers when you take it out of the anvil.

Well, Jean, heat up a piece from the scrap pile and try out your new tool. Hey, it looks like the hardie worked fine. It cut the piece off in good shape and the edge held up fine. As you use this it may get softer because you constantly heat it up; if it starts to deform on the edge or curl, you may have to re-harden and temper it. When you do, it pays to anneal it before rehardening. I grind a groove across the end of the shank on all my tools that are made from a water-hardening material, and two grooves on oil hardening. That way I never have to wonder what heat treatment it takes; a glance tells me.

Jean, I don't like to spend more money than I need to, so most of my tools are made from pieces from the junk yard. The kinds of scrap I look for are car or truck axles, steering link parts, coil springs, tines from old horse-drawn hay rakes, torsion bars, etc.

To determine what heat treatment the piece requires, first heat up the end and quench it in oil; if it gets hard and a file just slides over it, then you know it is oil-hardening. If it doesn't get hard, reheat it and quench it in water; then if it gets hard it is also a steel you can make tools from. If it still doesn't get hard it is probably mild steel and can be used for almost anything that doesn't require hardening. As soon as I know what heat treatment a bar takes, I grind the proper groove or grooves in the end; then I'll always know how to heat treat it.

Before I use a piece of scrap for a job that will require much bending, I'll make a sharp trial bend and check to see if any cracks form in the outside edge. This is a condition known as "hot short" and is usually caused by sulphur in the steel (sometimes added in the steel mill to enhance its machinability). If it does show hot shortness I usually throw it away.

Jean, to make a cold-cut hardie (one for cutting cold steel) use the same procedure we did to make this one except make the blade thicker and grind the edge differently. Hotcuts should have about 60-65° included in the edge, cold-cuts 75-80°.

To make a fuller, use the same method; then, depending on the size fuller you want, make the end a suitable width. Finish off the radius with a top swedge, or rough-forge the radius and finish-grind or file it to size. A swedge is the opposite of a fuller, it has a radius sunk in it.

One thing I didn't mention is something called "decarburization". This happens when a piece of steel is heated and some of the carbon leaves the surface. This happens mostly when your fire has too much unconsumed oxygen when it reaches your piece. It can remove enough carbon so that the surface of the piece will not harden, but the center will. It is rarely more than 1/32" deep, most times less.

Well, Jean, you've made your first anvil tool and it looks like a good one. Next time we'll make a handled tool. How about a hammer? See you next time!"

This article was reprinted courtesy of the author Ed Oggier, The Anvil's Ring and ABANA. It was originally published in the Winter Issue of the Anvil's Ring 1987, Volume 15 Issue 3. Reprinting of this article must be cleared through the ABANA publishing committee

LAMA. (Louisiana Metalsmiths' Assoc.) Raffle

Is raffling off a beautiful hand made wooden tool box filled with beautiful hand made (mostly) blacksmith tools as a fund raiser for this year. This is a good set of tools. We welcome all LAMA / ARF members to donate a handmade tool to the cause and please support the group by buying some raffle tickets.
http://lametalsmiths.org/news/raffl.htm
Visit the link above to see some pictures of some of the goodies.
25 tickets for $20 or $1.00 each
Where to send for your raffle tickets:
David Bernard LAMA Secretary
DBA-ARCHITET@WORLD.ATT.NET
130 Heart D Farm Road
Broussard, LA 70518
337-837-6037 voice ~ 337-837-8830 fax

Building Blocks

A "Back to basics" project

the Anvil's Ring/Summer 1988

by Dorothy Stiegler

(Second of two parts)

Here we are again. Let's finish the project we began in the last issue. Using 18 gauge non-galvanized sheet steel, cut three discs, one in each of the following sizes: 1 1/2", 3 1/2" and 4" in diameter. Mark both the smallest and the medium discs into quarters, and the largest disc into sixths. Also mark the center point of each disc.

Use cutting shears to cut away the corners between each quarter section on the small and medium discs (see Fig. A).

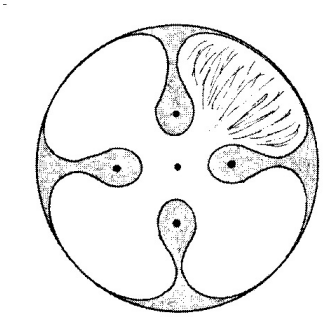


Fig.B

Drill a 3/8" hole between each quarter, 5/8' from the center mark (see Fig. B). Use the shears to cut down to these holes as shown (also Fig. B). Be careful

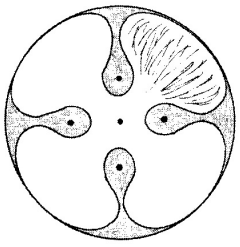


Fig.B

not to cut past the holes.

On the largest discs, mark and cut out six sections as shown in fig. C. Use the shears to cut down between each section to within 1/2" from the center. You don't want the cuts to meet in the center. File all

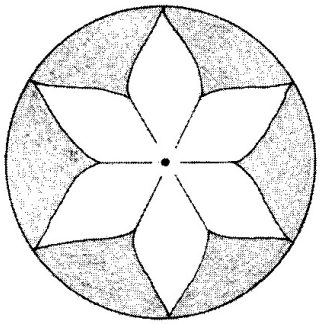


Fig. C

edges.

Now heat each piece and, using a heavy cross peen, hammer-texture the surface in line with the radius of each section or petal (see Fig. B). Take care not to hammer across the petals. Be sure to come clear out to the edge of the petal and keep turning the work in a circle with the left hand as you hammer up and down in place with the right hand. This texturing gives a lacy effect to the flower. You can do this part cold, but if you heat to around 1 2000 (that's a "red" heat), the lacy effect will be intensified.

Now, "mike" the tenon on the stem you made earlier (preceding article) and drill out the center of all discs (about 1/16' under the tenon size). With a square file, file the hole until it will slide down over the square tenon. You want a nice snug fit to prevent the blossom from rattling on the stem later. "Super glue" can become your best friend later if you don't take time for a good fit here.

Now, to help persuade the petals to go in the direction you want them to, you will need to "start" them before assembly. I use a series of rounded ball punches backed by hard wood. The ball punches range from 1/4" to 2' and use the three most suited to the project — in this case probably a 1/2" ball would do the next step well. Lay the pieces down on the hard wood so the
veining on the smallest disc will be down, and on other two it will be up. At the base of each petal (see the X's in Fig. A), use a hammer and a ball punch to "set" a dimple in each petal in the direction you want the petal to bend.

Next, measure to be sure your tenon is 3/8" long. It must be cut off if it's longer and filed lower into the hip if it's too short.

On this next step, take care to lay down the petal layers in the correct order. The largest one goes on first and the medium size next, followed by the smallest. Remember, the bottom and middle layers should now have their veins facing up, and on the top layer they should be facing down. Place a monkey tool over the work to "set" the shoulders down onto the tenon. If you don't have a monkey tool, take a 5/8" round X 2" long piece of stock and drill a 1/4" center hole in the end. Make the hole 1/2" 5/8" deep. Be sure to round off the facing edges so it doesn't cut into your work. Once it's set, the tenon is ready to

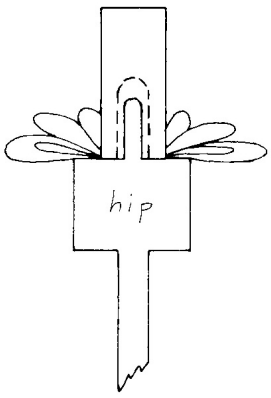


Fig. D

rivet (see Fig. D).

Small tenons should be riveted cold to prevent swelling between the petal layers. use a small ball peen for this. Come straight down onto the tenon head, carefully so it does not bend. Then, using a flat, squaresided punch, "set" the edges of the rivet head down onto the petals all around the border of the head. Make sure everything is nice and tight.

Assemble your oxygen-acetylene torch or propane torch using the smallest tip possible (I use a HenRob Dillon*). I get a pair of wide gooseneck tongs, my needle nose pliers and a can of water ready (for quenching the pliers this is very important). I've found the round neck of the tongs (see Fig. E) is great for a later part of this assembly. (*For more information on this write to: Rob Gunter, 2415 Princeton N.E., Suite M, Albuquerque, NM, 87107.)

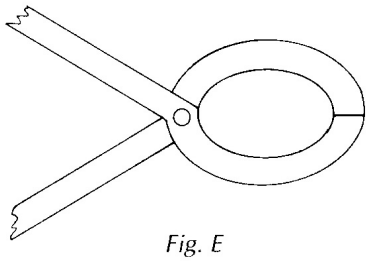


Fig. E

I recommend using sunglasses and/or safety goggles here because heated scale and intense light are hard on your corneas and macula. Look carefully at Fig. F and follow the diagram while rotating the work in a circle. Heat at the X on each one.

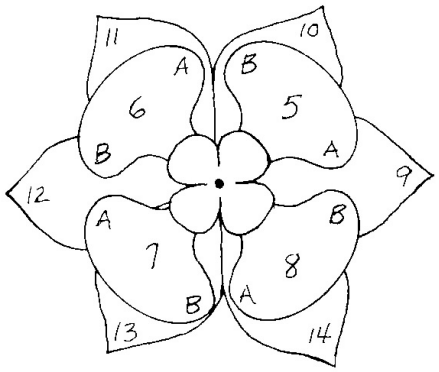


Fig. F

Starting with the top layer, heat area X and use the needle nose pliers to raise each petal straight up from the inner area where the cuts end. Next, gripping the edge of one side of petal #1, curl the edge toward the center. Keep the top outer edge straight so the whole petal will be formed as shown in Fig. G.

Now repeat the process on petal #2 so it will fit into petal #1 (as shown in Fig. H).

Fig. G

Fig. H

Next do petals #3 and 4 (as shown in Fig. J). I don't close this up tight because I may want to get in there and reset that rivet head later if it rattles I personally can't stand super glue.

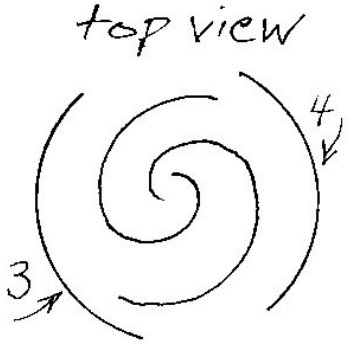


Fig. J

The next layer of petals will become a daffodil cone. (If you prefer a jonquil, make the medium size disc 2 1/2" in the beginning. Everything else remains the same.)

As you heat the base of petal #5 (Fig. F) down close to the rivet, grasp the outside edge with the needle nose pliers and pull the petal straight up, then angle it out at about 75°. Now heat along side "A" of the petal from the tenon to the outside edge, and shape it into a semicircle (as shown in Fig. K.)

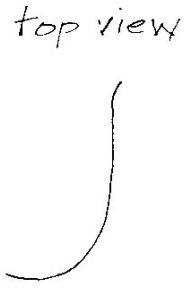


Fig. K

Leave area 5-B of the petal straight, but let the center area of the petal go curvy. Do petals #6, 7 and 8 the same way. All the sides marked "A" go inside the circle. This will now allow you to start with 5-B and curl it into a real half circle, putting 5-B onto the outside of 6-A. Then 6B goes outside 7-A and 7-B goes
outside 8-A, and 8-A goes outside 5A. This makes an overlapping "pinwheel" of the petals.

This is where I use the round neck of those tongs. If I heat that cluster of petals and gently squeeze it within the round neck of my gooseneck tongs, can really get a nice round daffodil center — smaller at the bottom and wider at the top, because everything is at a 75° angle.

Now, heat the top edge of each petal approximately 3/8" from the edge and fold it out at 90° to itself. With a little dexterity you can do this perfectly. (Try to keep the image of a daffodil in your head.) With the veining "in" on the piece, it becomes "out" on the lip, and will become really lacy and pretty.

On petals 9 - 14 (Fig. F), the idea is to dish the center and curl the edges up with the tips also going out. This is easy with the torch and needlenose pliers.

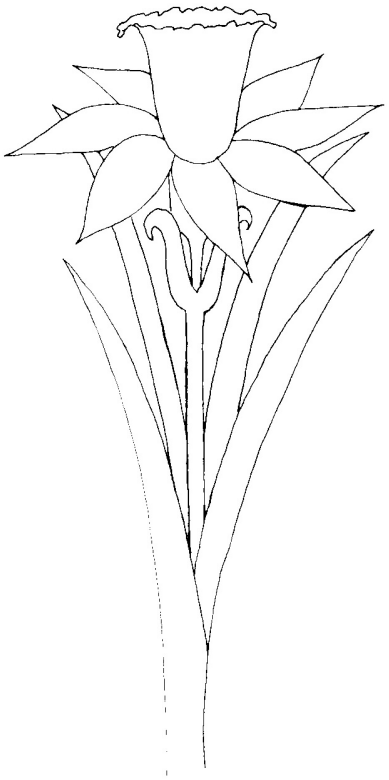
Fine tune the flower now and reset the rivet if necessary. If you do reset, be sure to close the center up. If everything is still nice and tight, then just close up the petals on the top layer, and you're ready to go on to the next step.

Once the flower part is finished, it's time for the leaves. Depending upon the length of the stem, you will need two, four or six leaves. The smallest set goes up under the flower petals. The next set sticks up over the top of the lowest layer of petals, and the third set reaches the height of the first set of leaves.

If you wish to gas weld these leaves on, it's smooth sailing from here. Simply crimp those ends around the stem and weld up. Start with the pair of leaves that will be closest to the flower. Daffodils have paired leaves. Be sure to file.

For the forge welders among us, there is a real slick way to do this job. Start with the set of leaves that will be closest to the flower and get the leaf stems curved enough so the stem will fit nicely. Then lay a piece of 2" thick 4" X 5" stock on the forge for use as an anvil. Next assemble two tongs, a rounding hammer, and anhydrous borax. After putting borax in the stem troughs of the leaves, lay both leaves (the first set of two) on the left side of the forge near the fire. I hammer right-handed, so I place my favorite hand hammer on my right.

Use two pair of tongs, one to hold a leaf in the



left hand, one to hold the stem (with flower out towards you). Bring the stem of the flower up to approximately 2200° and move the leaf into the fire with the left hand, while fluxing the stem and holding it with the right hand.

Flux quickly so as to lose no heat, then put the stem back into the fire and raise it to approximately 2400°, holding the leaf at the edge of the fire. As the stem heats to 2500°, move the leaf into the forge weld heat. In this way it will rise quickly to the necessary temperature. Pull the leaf out with the left hand and the flower stem with your right. Giving them a quick fling, lay the stem down on the makeshift anvil on the forge. Place the leaf on top of this anvil (with your left hand), drop the tongs in your right hand (your left hand will be holding the work down) and pick up the hammer to tack the pieces together.

All of us "6-week Turley wonders" have seen the drop-tong trick. Repeat the process with the second leaf placing it opposite the first one. Then take a welding heat over all and finish it up. Add as many pairs of leaves as you wish. You may want to take a dry run or two to get the movements down before you work on your completed piece.

For the finish I use a nice red heat over all. Stick the work in your gas or coal forge, or heat throughout with the rosebud on your oxygen-acetylene or propane torch. Then, as the temperature falls below 800° (it does this while you turn everything off and fix it in the vice), brush with a soft brass brush. it gives a terrific brass plating finish to the edges of the petals. Don't get too heavy handed with this or it can end up looking tacky. Next apply beeswax to cover the entire piece. As it cools blow it off with an air hose to keep it from forming "drip lines".

A product called "Treasure Gold" is amazing for edge highlighting. Put some on your index finger and run it along the leading edge of the work on all surfaces. You can use a Q-Tip for this operation when reaching inside areas. Again, be careful not to get too heavy with this finish or it will look tacky.

For a base you can drill a hole into a piece of marble to hold the flower stem. Add some super-glue into the hole to help hold the stem. You will have a beautiful daffodil sculpture. See you next time!

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Forging Notes for Non-ferrous Metals:

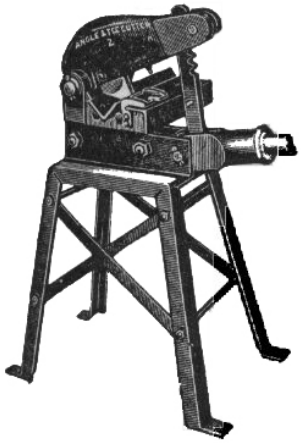
by Brian F. Russell,
Forging On The River VIII
From the River Bluff Forge Council,
Memphis Tennessee

Non ferrous metals are defined as those which have little or no iron in their composition. They include aluminum, brasses, bronzes, as well as the precious metals such as platinum, gold and silver. The non-ferrous metals are generally used in alloy form, being alloyed with elements common to the steels, such as nickel, manganese and silicon. Alloying two different non-ferrous metals to create a third is frequently done as well.

Due to their higher conductivity heating in a gas forge rather than a coal forge provides a greater degree of control over the result. A medium heat rather than a welding heat provides more control as well.

Aluminum

The most commonly available alloy of aluminum is designated 6061-T6. The suffix refers to the level of initial heat treat, with T6 designating solution heat treating and artificial aging. This alloy is referred to as a wrought alloy and has a nominal composition of: .6 Si, .28 Cu, 1.0 Mg, .20 Cr., remainder Aluminum and impurities, always including trace amounts of iron. This alloy is heat treatable.



Forging 6061 -T6 requires considerable attention to the temperature. Forging begins at 750 F and ends at 950 F. As this is below the incandescent range and aluminum doesn't oxide in the same way as steel with temper colors, there is no color indicator during heating. Thus there are a number of methods to determine when the material is ready for forging. A pine stick, such as a paint stirrer or door shim when dragged across the surface of 750F aluminum will leave a black scorch mark. A mark made on the aluminum with a black felt tip pen prior to heating will turn brown in the forge upon reaching approximately 750F. This method seems to have more variability than the pine stick method. Thirdly, there are commercially available "tempilsticks" with highly refined temperature ranges. The pine stick method yields the best results because it requires active diligence in monitoring the temperature. It is very easy to overheat the material, and it is immediately obvious upon beginning to hammer as the material crumbles under the first blow!

Aluminum, because of its unique structure, retains and conducts heat readily. As well, it has a low melting temperature (1220°F). This feature can cause overheating of the work as forging with power progresses. Thin sections can overheat, causing cracking and crumbling. Restraint should be used when working thin sections to ensure that the aluminum stays within the forging range. Gentle heating yields good results when doing scroll work, as aluminum can tend to bend unevenly if not allowed to come to temperature slowly. Again, patience and diligence will yield the best results.

Welding aluminum is best achieved with the shielded metal arc process (MIG or TIG). Clean the surfaces by abrasion or wire brushing immediately prior to welding. This is extremely important when welding aluminum. Designate a stainless wire brush specifically for this task. Use 100% argon shielding gas. AC TIG welding is generally preferred for manual welding of material up to 1/2' in thickness. Use a pure tungsten electrode. For DC TIG use a 2% thori-

ated tungsten electrode. For thick sections .MIG welding provides much faster welding with deeper penetration. A spool gun makes it easier, although a short cablehose kept relatively straight (to prevent kinking the soft wire) also works adequately. Refer to a welding manual (see references) for complete information on welding practices. Grinding aluminum is best done with zirconia (blue)discs or specially designated hard discs that reduce loading. Also, belt grease/ lubricant in conjunction with reduced pressure prevents loading on the abrasives. For die grinding there is a line of special coarser burrs that don't load as much as double cut burrs. Sandblasting and wirebrushing finished works gives an attractive satin finish. The use of solvent dies in acrylic lacquer is another interesting way of finishing. Polished / brushed aluminum should be top coated with a clear acrylic lacquer to prevent surface oxidation.

Bronze

Two types of bronze useful for forging are silicon bronze and aluminum bronze. . Aluminum bronze C954 has a composition of 85 Cu, 4 Fe, 11 Al. It is technically speaking not a true bronze as it contains no tin but is referred to as a binary alloy. Stock for forging is available as continuous cast and hot rolled squares and flats, sold oversize. This material is rather rough looking and the surface has a pattern of very small fissures that disappear upon forging or which can be removed by rough grinding. It is recommended that stock be purchased oversize and forged under power to the desired nominal size. Alloy 614 is the sheet form of Al. Bronze: 91 Cu 7 Al. Its slightly different composition means that there may be a slight color variation between 954 and 614.

Forge aluminum bronze in the red to yellow orange range. It is very forgiving and overheated stock can be allowed to cool without it disrupting. Unlike most other copper based alloys, aluminum bronze is extremely stiff when cold and straightening pieces when cold is problematic. When worked in the temperature range the metal shows very little tendency to edge cracking when drawn out thin and during hot bending. It scrolls very smoothly. Weld aluminum

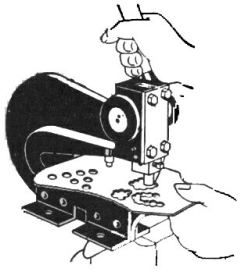
bronze with A MIG, using Ampcotrode 10 wire (.035) and 100% argon. Higher wire speeds (amperage) and lower voltage than used in welding steel is generally the case. Preheating is usually not necessary except for very thick sections (1.5' +). The wire is very stiff and can be run in a regular cable hose up to 15'. Joints should be vee'd wider than steel, to around 55-60 degrees. Thinner sections can also be TIG welded using 2% thoriated tungsten electrodes, DCEP and 100% argon. Grinding can be accomplished with the same materials as used for steel. Aluminum bronze is hard enough that loading of abrasives is not a problem. Drilling and tapping requires sharp tools. A dull drill bit will not work on aluminum bronze. Cutting this hard material on a bandsaw requires a higher blade speed (270 fpm) and more. Aluminum bronze accepts patinas, although testing is a must. The polished material has a beautiful golden hue, more yellow than silicon bronze. Flame oxidizing is another useful finishing method.

Silicon bronze, c655. is available in cold rolled forms as bar stock and sheetplate. It has a reddish hue due to the very high copper content (97 Cu, 3 Si). Working temperature range for forging is slightly lower than for aluminum bronze, generally red to bright orange. It will fall apart at too high temperatures. It exhibits excellent forging characteristics, with little cracking in thin sections and bends. Because it is available in plate as well as bar it is an ideal choice for

the construction of sculptural forms. Cold bending / straightening is more forgiving than aluminum bronze, but care must be used to prevent cold cracking. Welding is similar to aluminum bronze and an exact matching MIG wire is available. It will work in a standard cablehose. TIG welding (DCEP) with a 2% thoriated electrode is an excellent choice for sheet and plate up to 1/4". Welds flow beautifully. Vee thick joints to 45 degrees. Because of its softer nature silicon bronze grinds easily and quickly with standard abrasives and burrs without loading. It accepts patinas more easily than aluminum bronze, although it has more tendency to change as it ages due to oxidation, Therefore a clear acrylic lacquer topcoat is recommended.

Copper

Pure copper is a joy to forge. It has a very long working range, essentially from cold to yellow. Because of its malleability it is rare for copper to crack during forging or bending. When worked hot there is no need to anneal because there is no work hardening occurring. And when finish working thicker sections cold there is usually no need to anneal. For sheet, anneal by heating through to red, then quenching in cold water. For thin sections cold planishing to work harden effectively adds stiffness and strength. Because of its softness careful planning of the work sequence is necessary to prevent deformation of previously worked areas. Even when cold it is possible to easily bend 1" x1" sections, especially when working in the vise. Copper can of course be soldered or brazed, but these methods lack the strength necessary for joining larger sculptural shapes. Copper can be MIG welded using pure copper wire with a special gas mix tradenamed Blue Shield #5. Preheating is absolutely essential as the copper conducts the heat so quickly and has a high melting temperature (1980° F). For tapping threads into copper a thread forming tap rather than cutting tap works better. Copper can be quite "gummy" due to its softness when machining. When sawing use higher blade speeds (270 fpm) with a coarse blade. Copper is very reactive and receives patinas wonderfully, both hot and cold.



Safety

Welding and grinding non-ferrous metals produce unique pollutants that may have deleterious effects on your body's health. The use of common sense, ventilation and the appropriate safety gear including respirators and safety glasses is essential.

Contact

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Metallurgy Fundamentals by Daniel A. Brandt ISBN 0-87006-922-5
Welding Aluminum: Theory and Practice The Aluminum Association ISBN 89-080539
Metals for Engineering Craftsmen, COSIRA
Machinery Handbook 25th Edition

Sources of Supply

Aluminum bronze:
Sequoia Brass and Copper 2289 Industrial Pkwy. West Hayward, CA 94545 800-362-5255. Will drop ship from many locations around the country.

Mig wire for aluminum bronze
Repair Alloy 414-542-9747 Ampcotrode 10 in 2 lb and 30 lb spools. Silicon Bronze
Atlas Metal Sales 800-662-0143

Clear Lacquer
Nikolas 800-346-4741 Incralac and other coatings for metals
Solvent Dye
Sculpt Nouveau 800- 728-5787

Reprinted from the Guild of Metalsmiths June 2002

Just a Tip:

by David Mariette
Guild of Metalsmiths Volume 26 No.2 June 2002

In the last issue I started a column to pass on tips and tid-bits of information that I thought may be helpful in your endeavors at the forge.

Recently, there was a question posed to "The Bellows," an on-line question/answer board that is run through The Guild of Metalsmiths, that had to do with smoke in the shop. chimneys, ventilation, and etc. There were many very good responses to this question. One response in particular by Pete Stanaitis started me thinking beyond the question of ventilation, and on to a different subject, but of a related nature.

Pete had noted that a strategically placed shovel of coal on your fire, especially at fire-up, could help direct the smoke to the chimney instead of into the room. (Forgive me Pete. That is not a direct quote from "The Bellows," but I did not save the text. I hope I got the general idea anyway.) Once again I was reminded how important good fire management is to successful forgework. I have observed, as a teacher, that students that "work their fires" as they do their iron, are usually most successful.

An unattended fire, and by unattended I mean a fire that just gets used and used with little or no maintenance, can cause many complications if not flat out danger. When I was at the Ozark School, one student that I remember kept forging, adding coal, forging, and adding coal. He had such a big fire that the radiant heat from the forge literally started the wall of the school on fire.

When teaching forge welding classes I begin to expose the students to forging at much higher temperature. It is understandable that a person could think, "well, more heat means bigger fire." I have had my own students that have had their fires so big I could not stand in front of the fire, because it was too big and gave off too much heat. I can also say proudly that I have built a few pyres myself over the years, and they have been dandies. In trying to find a better way I have made a few observations and have one real good tip for controlling your fire so that you get the heat you need and keep the size of your fire manageable. You will be much more comfortable forging, use less coal, and do a better job

First of all, the coal. When you fire up the coal you will notice that as it burns and begins its cokeing process. It will form a crust over the top of your fire. This characteristic of the coal to meld together is referred to as plasticity. As this little plastic dome forms over your fire you have to push more air through the fire to get heat, because as this crust seals off the top of your fire, it impedes air from freely flowing through the fire.

As you are now pushing more air through the fire, the fire is now venting itself around the outside of the crust forcing smoke and hot gases to take an indirect path out of the fire. As this happens you are actually spreading your fire laterally underneath the crust. In further efforts to shoot yourself in the foot, you now have such a big fire brewing under that sucker, it takes even more air to get that baby up to temperature and pretty soon, wolla, you are out of control.

Then you start pouring water on the fire to try to make it smaller so you can actually stand in front of it. As the fire cools you again start pushing more air through the fire. Now, some of that water you have just put on the fire finds it way to the center of the fire causing a separation of hydrogen and oxygen sending a fireball out through the bottom of the firepot, out the air duct, an finally out the intake ports of your fan, scaring the hell out of the person forging next to you if not singeing their butt in the process. Nothing good happens with a fire of this nature. Sound familiar?

As you fire up, and as that crust begins to form on top of your fire use your fire rake to poke a hole in the top of your fire to act as a chimney. This simple task will allow the smoke and hot gasses to vent directly up and out of your fire keeping that hot spot of your fire directly over the twyere where you want it. It also will take less air to drive your fire. If you are using a crank blower this means less effort running the blower. It will cause less smoke to go astray in your shop because it will enhance the performance of whatever venting system you have. It will keep your fire from spreading and getting out of control.

See you at the forge!

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Northeast Blacksmiths Association

Northeast Blacksmiths holds its meets twice a year at the Ashokan Field Campus in New York State.

The Ashokan campus is located in Olivebridge, N.Y., several miles west of Kingston, N.Y. The meets are held the first weekend in May and in the first weekend in October every year. The main demonstration is in the blacksmith shop and there is a "Hands On" workshop for beginners. A main demonstrator is brought in for each meet, food and bunk-house style lodging are provided as part of the cost of the weekend long meet.

Contact : Tim Neu
to register for hammer-ins
or subscribe to the newsletter;
Tim Neu, Ashokan Field Campus,
447 Beaverkill Rd.
Olivebridge, N.Y. 12461 [914]657-8333
For more information check out the web site; <http://nba.abana-chapter.com/>

Join The Pennsylvania Blacksmiths Association!

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Can you host a PABA meeting? O **Yes** O **No**
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_____
Suggestions for PABA demonstrations

What is your skill level?
O Beginner O Intermediate O Advanced O Professional

Send your completed application with $ 10 (one year dues) to;
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271 Stoney Lane
Lancaster, PA 17603

PABA Membership Application
Membership is from
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PENNSYLVANIA Artist BLACKSMITHS' ASSOCIATION

New Jersey
Blacksmiths Association
90 William Avenue
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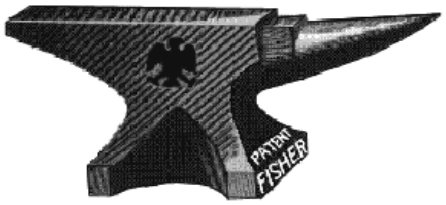
Attn: Larry Brown, Editor

New Jersey Blacksmiths Association



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How to Join or Renew your Membership in NJBA:

NJBA Dues are $18 per year (as of July 1, 2001).
Please make your check out to: "NJBA"
Please mail checks to:
NJBA, P.O. Box 195, Howell, N.J. 07731

Please include payment with the information listed below. You will receive a postcard confirmation of your membership, and will receive a newsletter within a month. NJBA's "year" runs from June to June. If you join mid-year, the postcard will offer a prorated dues option which will then allow you to extend your membership till the following June. The following information will be listed in a roster available to other members.

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