SOFA SOUNDS

SOF&A
SOUTHERN OHIO FORGE & ANVIL
Artist-Blacksmiths Association of North America

DECEMBER 1992/JANUARY 1993

MARK YOUR CALENDAR: Unless otherwise noted, all meetings will be held at the Studebaker Frontier Homestead on Rt. 202 about four miles north of I-70 near Tipp City. Please don't park on the grass or block access to the production area. Donations of items to the newsletter support raffle are always welcome. Please bring your work or tooling for display. The public and guests are welcome. Finger food and cold drinks provided on a break-even, donation plate basis. The forges at the homestead are available before and after meetings for individual projects. PLEASE BRING AND WEAR SAFETY GLASSES!

December 7th, 1PM	Demonstration by Bob Cruikshank.
January	Demonstration by Brian Thompson
March	Demonstrator needed.
April	Demonstrator needed

QUAD-STATE BLACKSMITHING ROUND-UP WRAP-UP

I don't think there is any question from just about all aspects the 1992 event was a tremendous success. Registered attendance was right at 700 - about 50 more than last year. The tailgate selling area is probably the largest blacksmith flea market in the U.S. with 60 or more sellers. We just about had to pry the demonstrators away from their stations when the demonstration periods were over. Lots and lots of really fine quality work on display. On the down side, next time I promise to have extra toilet paper on hand.

A special thanks goes to Emmert and Jane Studebaker for their continuing excellent support; the board members and officers of SOF&A for putting on the event; the Michigan team who, in particular, make the Saturday evening team competition a huge hit; all those who lent a strong back (and I don't want to be in an endurance contest with Dorothy Harrison!); the spouses who helped out on the Spouses Program, registration and serving breakfast the demonstrators and probably the 101st Airborne; all those who donated items to the auction or their prize money back to SOF&A; and all those others who helped out in one form or another during the event.

It is our policy to refund one-half of the basic registration fee for those who significantly help out on either Friday morning to set up or on Sunday evening to help put everything back in its place and a full refund to those who significantly help out on both days or during the event. If you fall in this category and haven't received a refund check, please contact Ron Van Vickle at 513-548-8408 so we can correct this oversight.

Chapter of ABANA

Castable Refractory Lining for Gas Forges

by Ron Thompson

There are many possible castable refractory linings that would be suitable for use in a gas forge application. Do not consider that the ones I mention are the only possibilities. You could contact a refractory dealer or foundry supply and ask for a castable refractory used for ladles pouring cast iron or steel and any of them would probably work. I would guess that the highest temperature inside the forge at the refractory is in the neighborhood of 2600 degrees Fahrenheit. Most ladle refractory is Alumina based with the higher the Alumina the higher the temperature tolerated and the higher the cost. Ladle refractory is especially good because it is designed to take thermal shock from repeated heating and cooling. This, of course, is what it will see as a gas forge lining, unless you are going to light your forge and leave it on forever. I can't afford that. The variety I picked is a two part system having a powder that is mixed in right before the water is added. It cannot be premixed because it is so reactive it would pick up moisture and set up in the bag before you could use it. It would have an unacceptably short shelf life. It is a very high Alumina (90%) but seems to be forgiving of how much water is added. Most of the castables have to be mixed very dry with a very controlled amount of water and vibrated as they are cast. They are easy to mess up. This system seemed to be more forgiving, but costs more per bag. It comes in 100 lb. bags and costs approximately $ 48.00 per bag including the hardener (F.O.B. Columbus,OH). It can be obtained from :

Allied Mineral Co.
2700 Scioto Parkway
Columbus, OH 43220
(614) 876-0244

(Ask for Mark Rowland. Allied doesn't normally sell in small bag lots but Mark has graciously offered to sell as little a one bag to blacksmiths. Tell him you appreciate the offer.)

Another supplier is Fenton Foundry Supply
134 Gilbert St.
Dayton, OH 45403
(513) 253-6104

Ask for Leo Kelly. Leo is a good friend as well as supplier and has indicated he would put up with a bunch of poor blacksmiths calling to order minimal quantities. He thinks one of us might someday get rich. Sure. Fenton handles a 60% Alumina product called "Pure-Crete" for $37.20 per 100 lb. bag, and another product called Kricon 28-XR for $35.40/100 lb. bag. Fenton also has a substance called "Hi-ram G" which is the consistency of modeling clay that would also be good for a lining if you think you could pound it in with a hammer instead of casting it like concrete.

To cast the Allied material, I first glued in a lining in the pipe of a substance called "J" paper which is really just 1/8" thick Fiberfrax from Carborundum Co. Fenton sells "J" paper as does F.W.Schaefer. Its about $ 2.00 per square foot also. The purpose of the "J" paper is to add a better insulation space and to allow for expansion of the lining. My cast forge can run yellow-white hot without any red showing on the pipe. The Glue used to hold it in is Sodium Silicate or "water glass" which can be obtained from a drugstore or from Fenton. It is used as a very high temperature glue and I skipped the glue on one unit and the whole refractory lining would slide inside the pipe if tilted or pushed (no real problem). Cut a piece of "J" paper to fit the inside of the pipe, wet the inside of the pipe and the outside of the paper with "water glass", and install the paper in the pipe.

Center a form in the pipe leaving just enough room around the form for the wall thickness. This is the hard part, finding a form the right size to use. For my forge using 8" pipe I finally found a couple of Clorox bottles when cut down and taped together measured 6" O.D. This left a 1" gap all around. Then I cut a 6" hole in a piece of plywood, put the form into the hole to stabilize it and centered the pipe around it so that I could pour the castable into the gap. For the 6" pipe I used a 2 liter Pepsi bottle (which is about 4" in diameter) for the form. It worked fine. Same hole in the plywood trick to hold the form.

Mix up in a 5 gallon plastic bucket enough castable to do the job depending on how thick a lining you want (I used 1"), add the hardener and stir vigorously. Then add just enough water to make a thick cement. Pour the castable into the lined pipe. Use a palm sander for a vibrator if you want; touch the edge of the pipe as you pour, the vibrations will help the cement get rid of trapped air bubbles and make it as dense as possible. This is really easier to describe than do so I just ended up casting the refractory on one and using the vibrator after the castable was in. On another one I did not use a vibrator at all and the lining seems to be fine. Time is a factor here because depending on the temperature the castable will start to set up in about 15 minutes so after you mix it don't waste time or you will have an expensive chunk in the bottom of your plastic bucket.

After letting it dry for a day (actually curing is a better word than drying) I was able to cut the Clorox bottles apart and remove them and I had a pipe with a layer of "J" paper and 1" lining of refractory. Be careful; the unfired lining is able to be damaged until you complete the firing-in cycle. Before you can use the forge you must go through a drying cycle. The real trick from here out is to very gently dry the rest of the moisture out. I did this by putting a very gentle lazy flame from the propane tank without using the venturi and let it stay for about 4 hours. You can see the moisture began to come off as steam. The key is the slower the better for the life of the lining. After no more steam or vapor is observed gently increase the heat until after a couple of more hours you can full fire up to red. If you rush this part you will probably develop cracks and lining will begin to fall out.

The comparison between the Fiberfrax lined forge and the castable lining. I took both up to 2000 degrees, 15:35 minutes for the castable and 2:45 minutes for the Fiberfrax. The maximum temperature reached was the same for both units with the castable naturally taking longer to get there. At first the maximum temperature I was able to get was 2150 degrees F. but that was with a one inch opening between the bricks at each end. I determined that I was allowing too much air in and closed the opening on one end and used minimal opening on the other and got 2400 degrees F. This was in a 6" pipe forge. I'm sure a larger forge would have less loss and could get a higher temperature. 2400 degrees F. is a bright yellow-almost white(hot enough to hurt your eyes when you look into it)-and looks like it would be enough to weld, although I haven't tried it yet.

I put a 1/2" square bar in each. It took 3:00 minutes to get to red for the Fiberfrax and 2:00 minutes for the castable. I don't know how durable the castable lining will be, certainly better than the RFC, since flux will dissolve RCF and make it disappear. I'm not a full time smith so my forge doesn't get used a great deal where I can determine the life. There are patch materials available for ladle refractories, and it could very well be that the castable can be used a long time and repaired with the patch material. Maybe I can do a report on those later. Good luck.

Blacksmithing Notes

by Ned Edelen

Quad State Roundup 1992

Hershel House — Woodbury, KY

Hershel House is a gunmaker who specializes in muzzleloaders of the southern mountain rifle genre. He is capable of making an entire rifle from scratch, but seldom does. Like the old gunsmiths, he tends to purchase his locks and barrels from suppliers. He then stocks them and makes the iron furniture. If he were to forge out a lock, it would run up the price of a rifle by 150% because it is so time consuming.

Some Appalachian gunsmiths did forge their barrels and rifle them. Some also made their own locks. However most bought locks from England or Europe and most barrels were imported or bought from American manufacturers on the east coast. Often rough-forged barrels were bought and then reamed and rifled by the gunsmith. Much restocking was done to make old, damaged rifles and muskets serviceable. Worn out locks or barrels might be replaced. Hershel says that 19th century mountain flintlocks nearly all use the Birmingham English export lock.

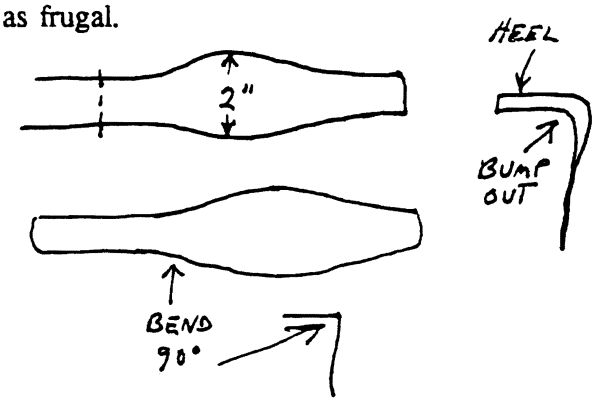
The pieces that Hershel normally would make for his rifles would be the butt and toe plates, the patch box, the trigger guard, the trigger or double set triggers, the side plate that secures the lock, the thimbles, and the sights. The size and shape of these parts varies with the age of the rifle he is trying to replicate. One thing that is generally common to mountain rifles is the thinness of the iron furniture. Iron was not overly plentiful to many backwoods smiths. They did not make parts such as trigger guards and butt plates any heavier than necessary. Hershel says some parts he has seen were downright flimsy. One thing he does emphasize is that actual quality and functionality of the guns was equal to Pennsylvania rifles. They just didn't have all of the fancy ornaments.

Early-Style Butt Plate

Start with whatever mild steel size stock is handy. Auto body steel is excellent to use, and it does not require forging to thin it out. Be aware that auto paint may contain lead. Be cautious, and remove the paint outdoors. Bar stock 1 x 1/8" to 1.5 x 1/8" will work. Spread the bar by fullering it to 2" wide. You can look on the inside of old butt plates to see the fullering marks. Even brass parts were beaten down after they were cast. Brass parts can be heated to a low orange and quenched in water to anneal them for cold forging.

Generally, revolution era butt plates were about 2" wide. Earlier guns were even wider. A few are found to be as narrow as 1 3/4".

Hershel likes to use copper templates or a brass butt plate as a guide to shape. Old butt plates were very thin. Today we don't have to be as frugal.



Cut off the butt plate from the bar after it has been spread to shape. At home, Hershel uses a soft hot cut, and cuts directly on the face of the anvil. He also uses Vise-Grips instead of tongs to grip the pieces. He doesn't even grind off the teeth because any marks will be filed out.

Work down the cut off area keeping it flat. Mark the blank with a template, and give the piece a 90° bend at the mark. The ratio is about 1/3 to 2/3 if you don't have a guide. Use a swage block or bottom tool to put a curve in the long part of the butt plate.

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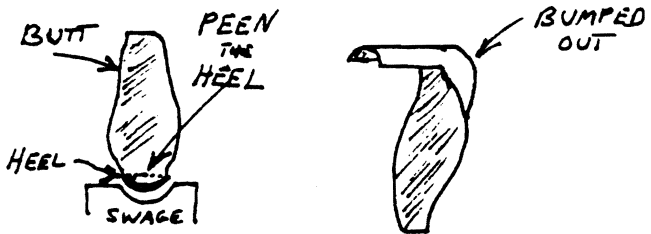
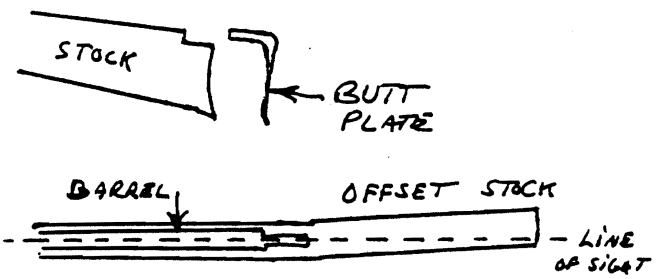
by Ned Edelen

Beat the short section or heel into a half-round swage block with a cross peen. Keep the heel and butt aligned. Bump in the corners at the bend. Re-bend the piece back to 90°. Get all of the proportions back. Use the squarest area of the side of you anvil. Try to get the part as close as possible by forging to save file work. Go back to the swage block and put the curve in again.



Early butt plates have to be bumped out and rounded at the bend. This is tricky to do. Hershel uses a long, pointy ball peen over a spoon depression in a swage block. A wood block depression is also good. The proportions may get bad. Go back to 90°, and recurve in a swage block. Bump it out more until it is right.

File and polish the butt plate to a rough finish. Final finishing and shaping is done on the rifle as the stock is shaped. Before mounting the part you need to smooth up the inside, mark the stock, and cut the profile of the stock. Then mount the part with screws.



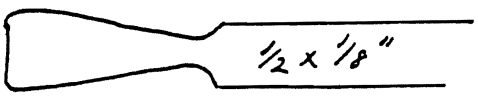
A "cast-off" stock is one that has the butt offset from the sight line. If you build one of these, you will have to file and bend the butt plate to match the stock angles. The butt needs to be perpendicular to the barrel, but the top of the butt plate needs to align with the comb of the stock. There are two main advantages to cast-off stocks. One is that the sight line aligns with your shooting eye faster because you don't need to crane your neck to line up the sights. The second advantage is that your cheek will not get bruised from the recoil. This is especially important if you are shooting a "roman-nose" style stock. These have a curved comb that can find your cheek bone and put a hurting on it even with light loads.

Early Trigger Guard

Hershel House forged a large, early trigger guard of Jacob Dickert style. There is no point in showing the exact size and style of the parts here since if you are interested in making gun parts, you will need to look at some old guns as well as studying the many books on early rifles.

Determine the size of the guard needed for your trigger. The size of your or your client's fingers and whether you are using single or double set triggers needs to be considered. Take a copper or brass strip, and bend it around the triggers and shape it to the gunstock. (You need to have the barrel stocked and the lock, triggers, and butt plate installed before you would need to forge a trigger guard.) Making your own iron mounts is better because you get a custom fit. If you are making a copy of a Pennsylvania rifle, you can forge your iron parts slightly oversize, then have custom brass castings made. This is the way the brass parts were made in the old days.

Take a steel bar of about 1/2 x 1/8" (could be as thin as 1/16") and neck it down.



Early rifles often show a remnant of their military ancestry in the trigger guard. There is a bolster area that on military muskets was the attachment point of the lower sling swivel. This

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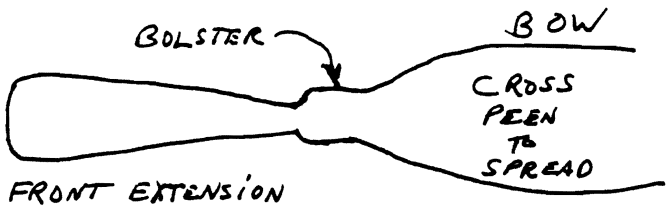
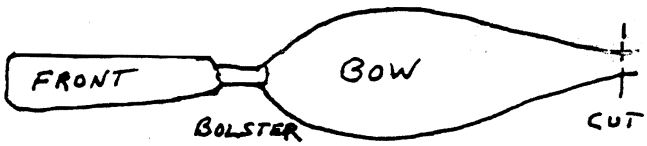
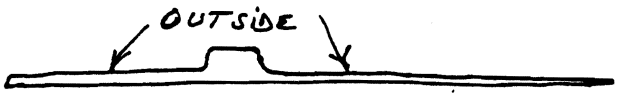
is tricky to forge. Don't forge the bolster until the bow has been thinned, but leave some metal for the bolster right behind the neck area.

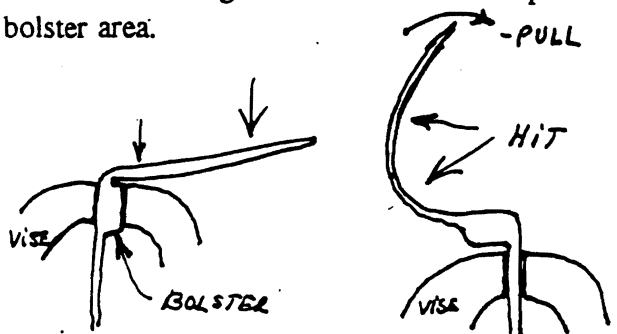


Spread the bow area with a cross peen hammer. This part should be fairly thin. The earlier the style of the guard, the wider the bow area should be. The principle of making the bow is the same as making a door latch. When forging these parts, remember that if you are using mild steel, you can do a lot of the forging at a black heat or even cold. Wrought iron must be forged no cooler than a red heat.





Cut off the guard from the bar. Upset the bolster area.

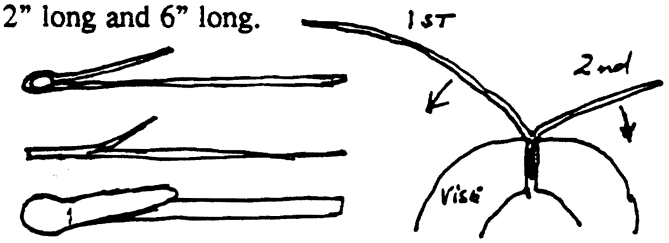


Heat up the guard. Quench the bow and the bolster. Clamp the guard in your vise so that you are gripping the bolster with the bow below it. Bend the front extension 90°. Be sure you are bending it toward what will be the outside or bottom of the bow.

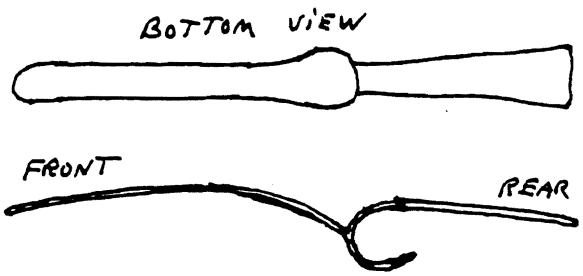
Reheat the guard. This time quench the front extension, and place it down in the vise. Grip the end of the guard with tongs and pull up as you hammer down on the bow to put a bow in it. Check your guard with the template. When it matches closely, check it on the gun itself. Curl the end of the bow.

The grip rail and rear extension of the guard are forged separately, joined to the bow with a small rivet, and then brazed to the end of the bow. Early guns had a wider grip rail. Hershel likes a three-finger grip on the guard to pull the gun into the shoulder.

Hershel likes a piece of 1/4" hot rolled steel for the grip rail. Forge it to about 1/2 x 8", or start with 1/2" wide hot rolled stock and thin as needed. Put this piece in a loop, and forge weld it back on itself. The welded area should be about 1/2" and the unwelded sections should be about 2" long and 6" long.



Place the welded section down in the vise. Bend the long end down 90° and the short end down 90°. Thin and spread the welded area a little on the horn. Flatten the short extension some.



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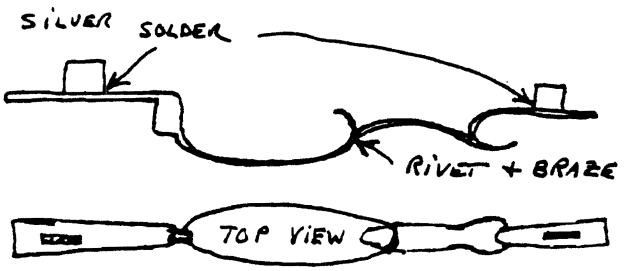
Fit the two sections to the stock. Mark the long extension where it needs to be cut off to match the bow. Fit the two pieces together. Adjust the grip rail to fit your fingers. Bend the two pieces where needed. Exactly how these two pieces fit together and their shape will always depend on the style of gun you are building, so these drawings are just a guide for how one style is made.

Drill a small hole in both pieces where they will mate. Remove the burr. Pin together with a very small rivet of clothes hanger stock. The rivet should fit the hole tightly. The rivet should be filed flat and then have its edges rounded with a file before peening. Peen over the horn, and peen tight so that the two pieces won't move. Tighten up the seam between the two pieces, and try to relieve any stresses on the rivet before you start to braze. If you don't, the rivet might pop loose when heated.



Fit the guard to the stock again and adjust if necessary. Braze or silver solder the joint. If you do this in the forge, have a small, clean fire, and hold the guard over the fire until it is a dull cherry. Use a borax flux. Touch with a brazing rod until the brass flows. Silver solder works at a black heat. Be sure the two sections of the guard have not moved before brazing.

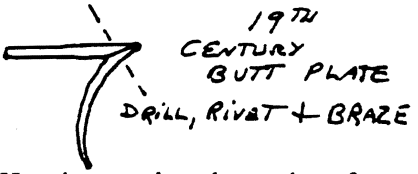
To complete the guard you can do some filing. File a bevel on the front and rear tangs if that matches your style. Use a half-round file to accentuate the curves. Use a square file on the bolster.

If you are pinning the guard in place, silver solder a lug on the front and rear extensions. If it will be screwed on, drill and countersink the holes. Round-head screws are not countersunk of course. Some gunsmiths used them.

To artificially age the parts you make, you can create pits with an accelerated rusting solution. Hershel uses a short section of aluminum gutter with ends crimped up to hold a solution of 1/3 clorox and 2/3 water. Light a fire under the gutter until the clorox and water are at a roiling boil. Wear eye and skin protection as well as old clothes. Do this outdoors. The parts should be polished. Coat the undersides of patch boxes and screw holes with lacquer for protection. About 1/2 hour of treatment should be plenty. Don't boil excessively, or you won't have any parts left.

Rinse off the parts and dry them. They will have a gray finish. This can be removed with sandpaper. Clean and oil the parts, or finish them as you like.

Hershel made another smaller mountain rifle trigger guard. This was not as wide, did not have a bolster, and the extension was a little different, but the procedure was the same.



He also made a butt plate for a squirrel rifle. Unlike the early butt plate that was bumped out, this later style needs to be made in two pieces. These are riveted together and brazed. Drop pieces of brazing rod on the inside of the joint. This gives a sharper point to the butt plate.

Blacksmithing Notes

by Ned Edelen

Other Tips

You can fire blue using Wesson oil. Heat and quench.

If you are aging a barrel in the clorox solution, make plugs for all openings. Drive in wood plugs coated with spray lacquer.

When hunting with flintlocks, a small feather of about 2" in the touch hole will keep out moisture. Quills won't sweat.

Hershel likes a copper base and silver blade for the front sight. Bone is good, but fragile.

If forging a lock, forge the external parts from mild steel. Weld a high carbon face on the frizzen. Case harden the hammer and lock plate. The internal parts can be filed from tool steel.

Gun springs can be made from old buggy or Model T Ford springs. Forge to shape. Anneal and stress relieve overnight. To harden, heat to cherry red. Quench in linseed oil. To temper, polish and heat to a blue.

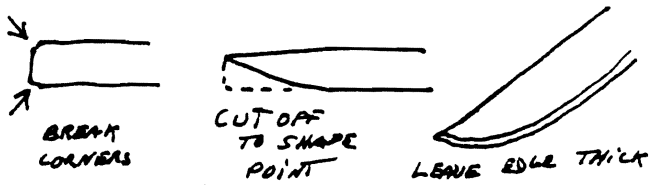
William White — Morgantown, KY

Willie White is a cousin of Hershel House. Willie likes to make his knives from buggy springs or buggy seat springs. Model T Ford springs would be his second choice for spring stock. He is experienced with these steels, and feels that he can get the most from them. A typical blade made by Willie would be about 5.5" long, less than 1/8" thick, with a drop point.

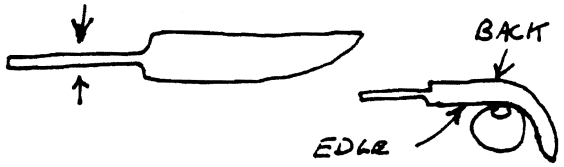
Willie is not into making super hard knife blades with modern steels. He likes a knife that is not too hard, and is easy to sharpen. If you want to get similar results as Willie does with buggy springs, look for a plain, high carbon spring steel. Model T springs have vanadium as an alloying element as did most parts of the Model T. It increases toughness and strength.

A buggy seat spring is about 1/4 x 1". Knock off the corners. Draw out into a long ribbon. Willie heats to a bright yellow, and he strikes very hard blows with a short-handled hammer of about 2 lb. He stops striking before the steel gets to a dull red.

Willie takes off a corner on the edge side to save some forging of the point. Do this on a hardy. Continue thinning and shaping the blade, but keep it flat. He does not wire brush the blank before forging, preferring to grind out any surface defects.



Cut off the blade blank on the hardy. Grip the blade end with tongs and draw out the tang. Flip the blade so that you get the same number of blows on each side. This would be for a narrow tang knife. Draw out the tang to 4-5". Leave it a little heavy for now so that you can get a good grip to work blade. Hammering the blade down nearly all the way saves grinding and filing time.



Now is the time to form the cutting edge. Grip the tang end. Heat the back evenly. Then turn the blank on each side for a short period to get a full heat for the next steps. This will avoid burning the edge of the blank. Drive down the point so that the blank is curved toward the future cutting edge. Hit the thick cutting edge to thin it. This will gradually straighten out the blade.

Judge as you progress with thinning the edge whether you will need to recurve the blank. If the blank starts to curve up before you finish thinning the edge, you should drive it down again. Waiting too long to do this will give you a rippled edge or a curled edge forming cold shuts. Another way to avoid these problems is to leave

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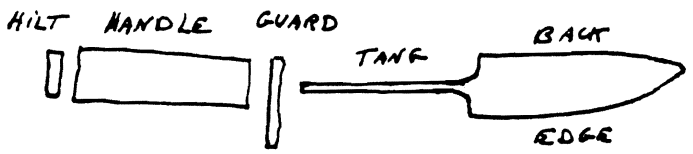
by Ned Edelen

the back thicker. Reducing it will drop the point some.



Once he gets to the point of thinning the back, Willie reduces the heat of the blank and packs the steel at a dull red to black heat. Just before you do any packing, put in your touch mark or name. Willie does this hot using two heats so that it is driven in deep, about 1/3 of the blade thickness. His handmade touch mark is a raised W in a recessed, circular background.

Once the blade is forged, grip the blade and round up the tang end. Anneal the blade at this point to relieve stresses in the blade. Heat the blade to a very low red and bury it for 24 hours in vermiculite, wood ashes, or lime depending on your preference. Even better is to place the blade in a hot oven for a number of hours, then bury it. If you don't anneal the blade, you are more likely to encounter warping, cracks, or breakage.

I did not stay for Willie White's afternoon session where he hardened and tempered the blade. Plain high carbon spring steel does not require too many tricks to harden and temper. Here is how I would complete the knife.

Once the blade is annealed and soft, grind out hammer marks and the surface scale. File to final shape. Polish with wet/dry sandpaper. Start with 220 grit. Don't go past 320 grit yet.

After grinding, filing, and polishing, heat the edge of the blade to a low red heat just past the point of loss of magnetism. Keep a magnet to test this. If you heat it to a higher temperature, you increase the grain size of the molecules, and lose any advantage you gained by packing. Do not heat the tang. Quench the blade, edge down, in tempering oil. I believe Willie uses Wesson oil instead. Most vegetable or mineral oils will work with oil hardening steels. If the blade doesn't harden in oil, use water. Don't use crankcase oil because of its carcinogens and low flash point.

Willie believes in doing the hardening and tempering quenches with the blade in alignment with magnetic north to align the blade molecules, and avoid a chance of warpage. Find magnetic north in your shop with a water compass. Float a magnetized needle in a dish of water.

Immediately temper the blade. Polish the blade sufficiently so that you can see oxidation colors. Heat the back of the blade slowly so that the colors run very slowly. You need to control your tempering heat source (a small propane torch is good) so that one part of the edge does not get hotter than another area. Quench the blade, edge down, in the oil when the back of the blade is blue and the edge is a straw color. Test the edge with a new file. If it catches a little, the blade should be tempered about right. If it is too hard in places, polish the blade and repeat the tempering procedure to get an even oxidation color on the entire edge. If you have gotten the edge too soft in places, reharden the blade and retemper until it is right. The back and tang of the blade should be soft to avoid breakage. The edge should be hard, but not brittle. Give the blade a final polish with 400 and 600 grit paper for a satin finish.

The final steps are to fit a guard over the tang. It can be a press fit or silver solder in place. If you silver solder, clamp the blade, point down, in a vise with a wet cloth wrapped around the blade to keep it cool. Fit a handle of your choice over the tang. Shorten the tang for a hidden tang handle. Use 5 minute epoxy to secure the handle. The tang can also be peened over the end of the handle. A nut or hilt can be used to secure the handle along with epoxy if the tang is threaded.

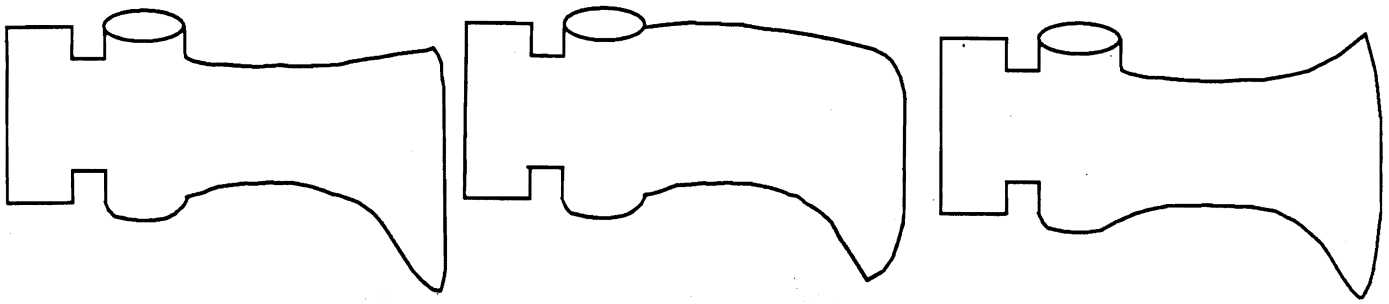
STUDIO ASSISTANTSHIPS: The Peters Valley Craft Center, Layton, NJ - 201-948-5200 is offering summer studio assistantships in blacksmith. Work/Study exchange provides room, partial meals and studio space Jun/Aug. Possible school/college credits. Application deadline: April 2, 1993.

THE DEMONSTRATION ---- Pipe Tomahawks

(Submitted by Richard Kern)

Done by Ron Thompson with Hans Peot standing in for Ron van Vickle who was under the weather. A reference text was available, **American Indian Tomahawks** by Peterson which showed the various shapes and styles. An elaborate pipe was also shown decorated with quills by Big Eagle. Also noted was the name for these pipes coming from the pipe bowl attached to the axe head and used for smoking. The bowl could be attached later or made as part of the axe as we as doing today. The hole in the gun barrel is not completely closed off and serves as a smoke passage way into the handle so that it becomes a pipe.

English or Eastern Style | French version | Western Plains version

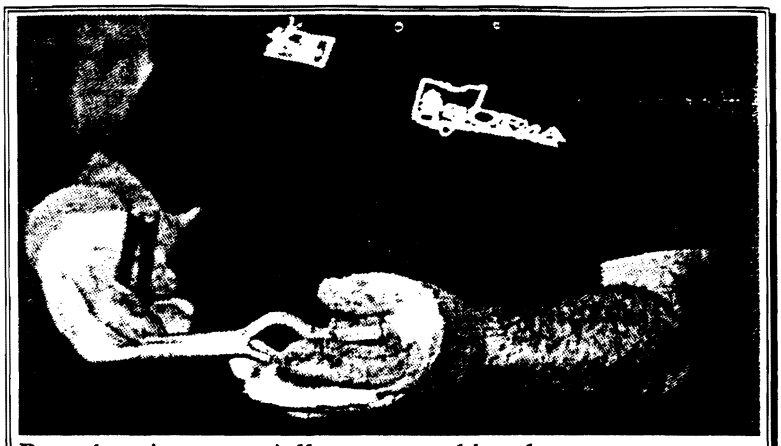


Dick Franklin in background.

Ron showing various tomahawk styles

Ron started by showing several different styles of tomahawks including one made in the 1920's and an earlier one. There are several ways to make tomahawk heads and the method chosen for this demonstration was to use a gun barrel section. This would be fullered on both ends. Lacking a spring fuller the reins on a set of tongs were used to good effect. The sequence of operations was to neck the end, drift the eye and fuller the face. To drift the eye requires you to hot cut through the barrel and then widen the cut until the drift can be hammered through that brings it to final size. The eye may be oval, teardrop or round in shape.

When the eye is finished its time to fuller the face and then turn it 90° and hot cut it to within 3/8" of the eye. The following picture shows the head after the eye is formed and just before splitting the face to receive the cutting edge. The cutting edge may be a piece of horseshoe rasp or other high carbon steel.



Ron showing a partially competed head

Now comes the forge welding of the carbon steel edge to the body of the ax head. Sprinkle liberally with flux and bring to a welding heat. Gaps will be found where there was insufficient heat. Watch for the flux to run and begin hammer welding. Use a peen to draw out the blade area and begin working to the overall shape. In hand work a rounded hammer face (no sharp edges) works well for drawing and will not leave deep indentations in the metal. One of your goals should be to keep the edge (bit) steel close to the eye. Final shaping and sharpening can be accomplished several ways - a hand method is shown in the next photo. Tempering of the steel is done by heating the blade to the red decalescence point where is loses magnetism, then slightly above that (50°F), quench in oil and draw to a deep blue.

Hans Peot on the sledge drawing the blade

Towards the end of the session it was determined that the blade was spreading too much at the top and some ot the metal had to be removed. Several methods were considered such as hot cutting, upsetting and filing. In the end the filing choice won out and Ron demonstrated the art of flat filing with a primitive rotary file as shown.

WANTED: Information on how to do color case hardening of steel. Contact Richard Karnesky, 1491 Amon Dr., Richland, WA 99352 - 509-627-1312.

RENEWAL REQUEST: Please note the month and year on your mailing label as it is the month in which you SOF&A membership expires. If it read 3/93 or earlier, it would greatly help if you would renew as soon as possible. Membership is still $5.00 per year and multi-year memberships are encouraged.

FLY-PRESSES: Rumor has it that Nol Putnam (The Plains, VA 703-253-5269) has several fly-presses for sale for $1,600 each. Contact Nol if interested.

FOR SALE: 700 lb bridge Anvil, 10"x26" face, six hardy tools, contact Bob Tapia, Kenner, LA - 504-464-8870.

BLACKSMITHING LOSES A FRIEND! Joe Humble passed away on September 30th as the result of a heart attack. Joe had been President and Editor of the Appalachian Area Chapter for over 15 years and was a past ABANA Board Member. Joe put his heart, mind and backbone to teaching and promoting blacksmithing and a goodly number of other chapters were started with the encouragement and help of Joe. His friends and chapter members have started a Joe Humble Scholarship Fund. If you would like to contributed to this fund in Joe's honor, you send send your contribution to Jack Wheeler, 2000 Clematis, Hixon, TN 37343.

FOR SALE: 250 lb, Nazel 2-B airhammer plus 70 dies, chisel, swage, manual and foundation print. RPM - 860, 7 1/2 HP motor and V220-440/3/60 power needed. Asking $7,000. Contact Glenn Horr, Rt 2, Box 112-B, Berkeley Springs, WV 25411 - 304-258-4058.

The Nov 92 issue of the newsletter of the Arizona Artist Blacksmith Ass'n noted Robb Gunter, head blacksmith at the Sandia Lab, is involved with one aspect of the destruction of nuclear weapons. The brain portions of nuclear weapons to be destroyed are put in a box of liquid nitrogen for a few minutes and then struck using a 3B Nazel powerhammer. Robb reports the remains will go through a 1/4" strainer. This has been found to work so well three Chambersburg hammers at other locations are being modified as required.

Clifton (Mr. Powerhammer) Ralph has scheduled another powerhammer forging class at Bill Manley's place in Kingston, TN in March 1993. If you want to learn how to properly operate and forge with a powerhammer, this class will be well worth your time. If interested contact Clifton at 219-980-4437.

The next National Ornamental & Miscellaneous Metals Association (NOMMA) annual convention and exposition will take place March 2-6, 1993 at the Lexington Hyatt Regency in Lexington, KY. A sampling of the courses to be held during the event are marketing, measuring tips, forging and abrasive finishes. For further information contact Todd Daniel, Assistant Director, NOMMA, 804-10 Main St., Suite E, Forest Park, GA 30050 - 404-363-4009.

If you renewed your membership in September 1992 and did not receive a copy of the October/November 1992 issue, please contact me at 513-427-2447 and I'll get on in the mail to you. Leave message on answering machine if I'm not there.

Reminder that coal is only for sale before SOFA meetings, except on an appointment basis with Emmert and then only in an emergency. Please try to plan ahead so you can get coal before the meetings only.

SHOP TIPS & TECHNIQUES: The following were, for the most part, paraphased from other chapter newsletters. While the information is believed to be reliable, neither SOFA or ABANA bear any responsibility for its accuracy or safe use or it, or any other information in this newsletter. Use is solely at the user's own risk!

- BENDING SQUARE STOCK ON THE DIAMOND: In the last issue there was an item by Jan Kochansky of the Blacksmiths' Guild of the Potomac on bending square stock on the diamond by forcing the stock into a form with an old ballpeen hammer with a "V" cut into the round peen. Hunter Pilkinton of Blue Creek Forge in Waverly, TN made legs for an order for several small tables via a different method. To bend 1/2" square stock on the diamond he cut out a pattern for two different length legs out of a single piece of 3/8" plate. To both ends he welded a piece of pipe large enough for one end of the leg to go into and then welded clips along the side of the jig. The legs were heated, one end put in the pipe end and then bend on the diamond to the jig, with the clips helping to keep the bottom diamond on top of the jig. A lead-faced hammer was used to prevent flat places in the edges of the legs.

THE BLACKSMITH

P S A H P T A P S L P B N H Y
R E D L U O H S A Q E O U E T
S T B E N D S R S N I B Y P U
G E I S C Q S S E T S P S A R
G R X R H R R H A A E Q G H I
M N O A E N O R I B D K C S V
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L E M R R C D N T S O F M O T
Q A I O E A K K Z L H L E O S
H G S D L P L E E O A E T W A
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L I V E M J A E C T D G L R H
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H E K V F O R G E S A W S U K

ARMOR
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BENDS
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RAMRODS
RASPS
RIVETS
SAWS
SHAPE
SHEARS
SHOULDER
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SOCKETS
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TEMPERING
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TIRES
TOOLS
TUMBLERS
VISES

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Mail application to: **ABANA, P.O. Box 1181, Nashville, IN 47448** Phone 812-988-6919
Dues Distribution: 1 Year Subscription to Anvils Ring: 68.5% $24.00, Adm. Offices & ABANA projects: 31.5% $11.00

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SOFA SOUNDS is the bi-monthly newsletter of the Southern Ohio Forge and Anvil (SOFA) Chapter of the Artist-Blacksmith Ass'n of North America (ABANA). Non-copyrighted material may be reprinted as long as proper credit is given to the original source. Unless otherwise indicated, the material herein was provided by the Editor. Membership is SOFA is $5.00 per year payable to S.O.F.A. in care of Ron Van Vickle, 1121 Central Ave., Greenville, OH 45331 - 513-548-8408. Send change of address notifications to Dick Franklin, 7158 Klyemore Dr., Dayton, OH 45424.

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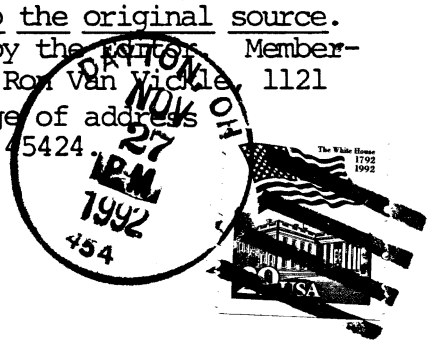

NOTE: YOUR SOFA MEMBERSHIP EXPIRES WITH THE MONTH ON YOUR MAILING LABEL.

FIRST CLASS

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Dayton, OH 45424

Membership Expires: 6 / 93