



# SOFA SOUNDS

**SOFA**  
SOUTHERN OHIO FORGE & ANVIL

JUNE/JULY 1985

**Artist-Blacksmiths Association of North America**

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NEWSLETTER EDITOR:

Ken Scharabok (513-252-3001)

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MARK YOUR ABANA CALENDAR: (NOTE: Unless otherwise noted, all meetings will be at the Studebaker Homestead on Rt. 202, south of Tipp City. Members are encouraged to bring guests and tools or items they have for display. Please don't park on the grass).

June 8th - 1PM BUSINESS MEETING followed by a short demonstration of hardy making by Hans Peot. Work on the homestead gate will start at 10:AM and continue after the meeting and demonstration. Come early and bring your favorite forging hammer.

July 11th - 1PM BUSINESS MEETING followed by a short demonstration to be announced. Work on the homestead gate will continue as previously mentioned.

MEETING NOTES:

During the April 6th business meeting no business was discussed which won't be outdated by the time you get this newsletter. Thus, I will skip to the demonstration.

Sidney member Ron Thompson demonstrated several steps in knife making. Ron said he became interested in blacksmithing largely as a result of an interest in knife making and prefers to make his knives "the old fashion way" by forging out the blade and then intentionally leaving them slightly unfinished (as they would have been in the era they were originally made by hand). This is against what Ron called "metal removers" who grind out everything which isn't the finished blade.

Ron used a length of W1 High Carbon Steel 3/8" x 1". He started to make a boot knife but, when the tang burned off in the fire while he was answering a question, someone suggested he now make a slipper knife. Ron pointed out that the blade should not be forged to the final shape before hardening and tempering since additional metal will have to be taken off for the final finishing.

To quench the blade, Ron used "quenching oil" which he said was in viscosity about halfway between water and motor oil. Water is a rapid quench which quenches deep into the metal but can make the blade subject to possible cracking or warping. Motor oil is a slow quench which would just harden the surface. Quenching oil is a compromise between the two and contains an anti-flashing additive. Ron used an acetylene torch to bring the entire blade up to critical temperature for quenching/hardening and then

**Creative & Friendly**

used the torch in the center of the blade, back and forth, to temper the edges to a strawish-bronze color. For a quenching tub he used a bread-baking pan since it is the right size to hold about 1/2 gallon of quenching oil and is deep enough so his blade wouldn't sit on the bottom when in the oil.

Ron brought along some knife blades on which deer horns had been used as the handle. To fit these he makes the tang in a triangular shape about 2 1/2" to 3" long, drills out the center of the horn, and then sets the tang using an epoxy-glue. He noted that he drills at an angle off of the tang slot a couple of times to provide finger-type securing points for the epoxy.

I suspect Ron whetted the appetite of the members present for the knife making demonstration to be part of the 1985 Quad-State Round-up in late September.

The meeting was well attended with somewhere between 45 and 50 present. On the raffle, the shovel pan jig/mold donated by Dave MacDonald was won by New Carlisle member Richard Knopp. The pair of tongs donated by Hans Peot was won by Dave MacDonald (from Findlay) (actually, Dave's was the first ticket drawn and he bypassed his jig/mold for the tongs). At the last minute Emmert Studebaker donated a freon bottle compressed air storage tank for the raffle which was won by guest Bob Schilling. The raffle raised \$57 to support the newsletter. Further donations of items for the raffle would be greatly appreciated.

Before and after the business meeting and demonstration work on the homestead gate continued. We are now getting to the point where work is starting on the larger of the structural pieces.

During the May 11th meeting, election of Board of Directors replacements and Group Officers took place. New to the board will be Hans Peot and Dick Franklin. Emmert Studebaker was made an honorary lifetime (voting) member of the board by acclamation. Hans and Duane Wegley will continue as President and Vice President, respectively, and I will replace Dick Franklin as Secretary/Treasurer.

In other business, Larry Wood reported on a number of items from the recent ABANA Board meeting at the Studebaker Homestead. Most of these should appear in the next issue of The Anvil's Ring. Of particular interest were:

- Jim Fleming (Box 133, Edwards, CO 81632) has expanded his "out of print" blacksmithing books listing. For a current brochure, send him a self-addressed, stamped envelope.

- The ABANA Secretary now has available brochures from several folk art schools which include blacksmithing during the summer. For a copy, send \$1.00 to P.O. Box 303, Cedarsburg, WI 53012).

Emmert Studebaker reported the following blacksmithing demonstration sites are available:

- Tipp City: 3rd or 4th weekend of June at Village Mill Country Store and again in Sept. for Mum Festival. Contact Bill Slop at 667-4512.

- New Carlisle: Heritage Festival in the fall. Contact Bernadette Unger at 845-9493 or Mike Smith at 845-0669.

- Wapakoneta: Flea market with opportunities to represent crafts. Contact Steve Piehl at 419-753-2185.

Following the business meeting Emmert Studebaker briefly described the use of an oxygen/acetylene torch and conducted a tour of the laser cutting equipment at Process Equipment.

The raffle brought in over \$50 to support the newsletter. I won a nice fireplace set made and donated by Terry Garman of Covington (it took me a half-hour to teach that kid how to palm one of my tickets to make it look like he drew it out of the can) and Fred Tanis of Dayton won a set of six foreign coins featuring blacksmithing donated by Larry Wood. For the June drawing one of the prizes will be an extremely well made pair of tongs for holding square stock made and donated by Bud Rolston of Lima. Since our goal is to raffle off two items each meeting, we need another donation for the next meeting.

Bob Zeller reminded us that he needs several demonstrators for the Boy Scout Jamboree at the Fair Grounds in Greenville on June 1st. Due to this event, our June meeting was postponed to the second weekend. Also note that the July meeting was also postponed to the second weekend due to the 4th of July extended weekend the previous weekend. If you can demonstrate, contact Bob at 849-1771 (Medway).

On the Quad-State Round-up in September, the following functions need one or more volunteers: tool sales, display area, sales area, signs, demonstration area set-up (on Friday), material/stock, clean-up (on Monday), publicity before the event, photo and note taking during the event, write-up for The Anvil's Ring after the event, entertainment, campfire music, special tools, concessions (soft drinks and coffee), video pictures (3-4 needed with equipment), gofers for the demonstrators, and wives to help with the ladies program. I encourage you to volunteer since the work spread among more people will make it much more enjoyable for all concerned. Don't forget that volunteers will receive a price break on the conference cost.

Before and after the meeting/demonstration work on the gate for the Studebaker Homestead continued. Our current goal is to have all of the individual pieces made to layout on the pattern for the Round-up and then to assemble and install it afterwards.

#### NOTES FROM THE INDIANA BLACKSMITHS ASS'N 1985 CONFERENCE:

- Richard Pozniak:

- Hammer heads and peens should be wider than the eye so you can get in corners.
- Make and use tools as light as possible, especially tongs for small work, so it will be like doing it with your fingers. Don't use a 5/8" chisel when a 3/16th will do.
- Square jaw tongs are the most versatile. They hold square, round, flat and, if you drill in holes from the sides, round sideways.
- Keep hot chisels thin and sharp. Round four corners. Make hot cutters short for more accurate cuts.
- Fuller blade edges should have a slight arc shape with no sharp corners.
- Chain links with one end cut off make nice bending forks when held in the vice. A complete link is better if you can get the stock into it.
- Tools, especially chisels, should fit the hand comfortably. Use chisel stock (but those made out of automobile coil springs will do).
- This is a tool made out of a jack-hammer bit which is great for cleaning up corners of cut material.



-- When cutting off metal, hot or cold, with a chisel ALWAYS be aware of what or who is in the direction of where the chip will fly.

-- A blacksmith doesn't have to be smart, just smarter than the metal.

-- Production jobs don't necessarily have to be made precise, just alike. Scrolls off a quarter inch or so won't be measured in the completed piece.

-- Slight hammer marks enrich appearance if not overdone. Like finished wood, metal shouldn't be painted unless absolutely necessary. Hammer marks are like fingerprints. Hand-forged metal should look like hand-forged metal.

-- On hammer eyes, make the initial punch hole as small as possible, then drift with an eye drift to the shape desired.

-- Use the right tool for the job. If you don't have it, stop and make it. The time spent making tools (and figuring out what tools are needed and how to make them) will be an excellent investment of your time as it will pay off many times in the future.

-- It is better to roll a scroll a little too little than a little too much.

-- First comes mechanics, then comes the artistic aspects.

-- Prudently used fuller and chisel marks give a three-dimensional effect to your work. Also chamfer corners to take off the sharp edges so it picks up the light better.

-- Make up several leg vice spacing bars to keep the jaws aligned when working on a small piece on one side. Put a half-round curve in one end to keep them from falling out of the vice while you are tightening it.

- Dorothy Stiegler:

-- To make a four piece basket handle start with a piece of 1/4" x 28" stock. Fold at the 7" mark, then at the 21" mark (these two ends should meet in the middle) and then fold in half so that at one end you have two bends and at the other one bend and two ends. Now forge weld both ends and twist into the basket shape. If you use square stock, you can twist two or four of the sections of the 28" stock (allowing one inch on each end for forge welding so your twisted area would be no more than 5" long). This way, you don't have to fool around with bailing wire to hold four separate pieces together.

-- When forge welding on an end, don't try to complete the weld in one heat. The first time just tack it together and the second time complete the weld. If you hit the forge weld hard enough to spray molten metal and slag, all you are doing is forcing out most of your welding material.

-- Dorothy was using what she thought was a brass brush which, when brushed on at about 300° - 400°, left a very nice, brass-like finish. Someone in the crowd concluded she had a bronze brush (available at some pottery supply shops) since brass would not transfer at those temperatures.

-- You can make a nice twisting wrench by welding on a handle to the top end of a square jaw, adjustable wrench. This way, the twisting action is more even.

-- Dorothy used a wooden mallet when straightening small stock, such as twisted 1/4" square, to avoid marring the edges.

-- If you have room put three leg vices at different heights. The normal height will be for twisting and filing, one at anvil height will be for upsetting and one halfway between these heights will be for bending.

- Joe Bonifas:

-- When making tongs with jaws for either round or square stock, first split about halfway through and then widen in stages. For round, first "V". Instead of a swage block, Joe had made a small swage (about 2" wide, 3" long and 3/4" thick) which sat on the anvil like the illustration.



-- Work harden reins to give more spring. If you have a striker or power hammer available, draw out the reins.

-- Adding a handle to a wire brush will make it easier to use.

#### A TRIBUTE TO THE BLACKSMITH :

During the year 1976 we, here in these United States, celebrated the Bicentennial of this great country of ours. We paid great honor to those Founding Fathers and Statesmen of this great country. But today I would like to pay a bit of honor to a more or less forgotten group of men who contributed a great deal to the growth of this great country also. These men were found in every city, town, hamlet, village, and every major cross-road across our country. And every wagon train which headed West in the early days was accompanied by at least one of them. They were tradesmen of a very special trade. And all other tradesmen, regardless of their trade, had to turn to them for their skills and workmanship. Whether they be a butcher, baker, cooper, cobbler, candle stick maker, carpenter, brickmason, stonemason, gunsmith, farmer, and even the doctor and dentist. For these were the men who cut the wagon tires, sharpened the plow shares, shod the horses, and did many tasks to produce the tools for industry and the implements of agriculture. I recall a few of the great people who emerged from this group of men: One by the name of John Deere, who came out of Vermont and settled in the Midwest. He set up his plow factory and made the first plow to turn the prairie sod. He was the founder of what is now known as the John Deere Implement Co. Then there was a man by the name of Remington who operated a forge in Western New York State. He was the founder of what is today the Remington Arms Co. Then there was a blacksmith in Southern Pennsylvania who dealt with the Indians. He made tools, implements and wagons. His family later migrated to South Bend, Indiana and established the Studebaker Wagon Co. and later the Studebaker Automobile Co. Then there was a man by the name of Cyrus McCormick who came out of Virginia and made reapers and binders. He was one of the founders of International Harvester Co. So, in honor of these great men, I would like to recite a famous old poem by a grand old poet, Henry Wadsworth Longfellow, titled "The Village Blacksmith", which is sometimes referred to as the Blacksmith's National Anthem...

Robert S. Zeller  
Medway, Ohio

#### THE VILLAGE BLACKSMITH

UNDER a spreading chestnut-tree  
The village smithy stands;  
The smith, a mighty man is he,  
With large and sinewy hands;  
And the muscles of his brawny arms  
Are strong as iron bands.

His hair is crisp, and black, and long,  
His face is like the tan;  
His brow is wet with honest sweat,  
He earns whate'er he can,  
And looks the whole world in the face,  
For he owes not any man.

Week in, week out, from morn till night,  
You can hear his bellows blow;  
You can hear him swing his heavy sledge,  
With measured beat and slow,  
Like a sexton ringing the village bell,  
When the evening sun is low.

And children coming home from school  
Look in at the open door;  
They love to see the flaming forge,  
And hear the bellows roar,  
And catch the burning sparks that fly  
Like chaff from a threshing-floor.

He goes on Sunday to the church,  
And sits among his boys;  
He hears the parson pray and preach,  
He hears his daughter's voice,  
Singing in the village choir,  
And it makes his heart rejoice.

It sounds to him like her mother's voice,  
Singing in Paradise!  
He needs must think of her once more  
How in the grave she lies;  
And with his hard, rough hand he wipes  
A tear out of his eyes.

Toiling, — rejoicing, — sorrowing,  
Onward through life he goes;  
Each morning sees some task begin,  
Each evening sees it close;  
Something attempted, something done,  
Has earned a night's repose.

Thanks, thanks to thee, my worthy  
friend,  
For the lesson thou hast taught!  
Thus at the flaming forge of life  
Our fortunes must be wrought;  
Thus on its sounding anvil shaped  
Each burning deed and thought.

1839.

#### REFURBISHING THE STATUE OF LIBERTY:

The 2/27/85 issue of The Wall Street Journal contained an article on the refurbishing of the Statue of Liberty which included some information on metal working methods required. I will quote pertinent paragraphs:

"French craftsmen in a cluttered workshop at the statue's base are hammering copper sheets in the same painstaking technique by which their countrymen built the statue in the 1870s. By the end of the year they will have pounded two tons of copper into a new torch and flame 21 feet high. Much of the work is going on in full view of visitors."

"The statue's designer, Frederic Bartholdi, chose copper over bronze for the giant project because copper is lighter and cheaper. And instead of casting, which doesn't work well with copper and produces a somewhat brittle result, he decided to shape the metal by a method called repousse (ray-poo-say). In it, workmen lay copper sheets over wooden molds and then, using a variety of exotic hammers, carefully pound the metal into shape."

"In Bartholdi's day it was no problem to round up workers skilled at such work. Today they are seen about as often as tasteful tourist souvenirs. Repousse workers are especially scarce in the U.S. "I wanted to hire American workers," said Eugene McGovern, a co-worker of the refurbishing contractor, Lehrer/McGovern Inc. "But the people in this country who said they were in the repousse business really weren't. And the park service dictated that the job had to be done exactly as it was originally."

"So a French firm, eager to do the work and experienced in repousse, got the job. That didn't sit well with Local 455 of the Iron Workers' Union, which, unimpressed by the fact that the statue was a French gift, tried to get the workers evicted as illegal immigrants."

"Bartholdi started with small plaster models of the statue and kept enlarging them, and his contemporaries are following the same procedure. They have built quarter-size, half-size and full-size models of the flame, each made of wood iced with plaster."

"Most of the repousse work is just getting started. The first task is to build the molds over which the sheets are hammered. Normally these would be of wood but precision in wood is difficult when shapes are as complex and fluid as those of the flame. So the craftsmen are making dozens of iron molds. Others are at work on the torch's handle, hammering copper sheets 3/32-inch thick against giant wooden molds. Several men work together on a large piece, heating the copper first with a long-handled blowtorch, then letting hammers and mallets fly in a regular, rhythmic pounding."

"They use a bewildering array of tools. There are well over 100 hammers alone, make by the workers themselves. With iron heads and dogwood handles, the hammers are thick at the holding end but quite slender in the middle. This gives them a whipping motion which permits the men to hammer *toute la journee* (without getting tired). Some of the hammer heads are round, some pointed and some blunt, depending on whether they will be used to hollow out a shape, smooth an outer surface or make ornamental creases. The visitors' gallery displays the tools used to build the statue a century ago, and they look just the same."

"American workers are replacing the inner skeleton of the statue. This, too, is a delicate and challenging operation. The bars, called armature bars, must conform to each crook in the arms and elbows, every fold in her gown. There are 1,600 bars in all, each shaped differently. Except for a few in her right foot which will remain for history's sake, every one must be removed and copied as, sitting next to the copper skin, they had reacted with the copper and corroded badly."

"To copy bars with simple angles, the workmen use a hydraulic press to bend pieces of low-carbon, malleable stainless steel. Copying a really twisted bar is tougher. The workers clamp it in a vice, put a new strip on top and then hammer it into shape while heating it with a blowtorch. This strip then becomes a template for making the bar which will go in the statue."

"Finally, to take out the brittleness which comes from bending, the workers heat the new armature bar. They put clamps on each end and run electricity through it. As the bar reaches nearly 2,000 degrees Fahrenheit it glows cherry red."

#### THIS AND THAT:

- Local member Dave MacDonald attended Francis Whitaker's project to upgrade the blacksmith shop at the John C. Campbell Folk School in Brasstown, NC. Dave promised to bring back a bunch of shop tips and techniques for the newsletter.
- Francis Whitaker is working with ABANA to write a book on blacksmithing fundamentals which should be available later this year. Should be one of the best blacksmithing books available. In addition, Fred Caylor and Michael Schmidt are also working on a book of "tricks of the trade", which will also be offered by ABANA. For those of you who are not familiar with Fred, he is a past President of the Indiana Blacksmiths Ass'n, and currently serves ABANA as the Coordinator of the ABANA Switchboard. The Switchboard was established as a contact point where blacksmiths could write with problems they have not been able to solve locally and get an answer from either Fred or one of his referral contacts. The book will largely be on the most frequently asked questions to the Switchboard. Fred's address is 3602 S. 800 E., Zionsville, IN 45360. If you would like to serve the Switchboard as a referral contact in a particular area of expertise, please contact Fred.
- The 1915 Sears & Roebuck 148 page "Tools, Machinery and Blacksmiths Supplies Catalog" is now available for \$7.80 from ABANA Executive Secretary, Ruth Cook, at P.O. Box 303, Cedarburg, WI 53012. This is a one-time printing by ABANA and the Mid-West Tool Collectors Ass'n so be sure to order before the supply runs out. Make check or money order payable to ABANA.
- SOFA baseball-type caps (one size fits all) and 1985 ABANA calendars are available at the meetings or by mail from Hans Peot, 6425 S. Scarff Rd., New Carlisle, OH 45344. Caps are \$4.00 (\$5.00 by mail). Calendars are \$3.00 (\$3.75 by mail). While the calendars are becoming a little outdated, the cost is worth it for the photos alone.
- The Dayton Public Night School offers a ten-week, two nights a week (6PM - 10PM) course in welding taught by SOFA member Ham Hammond. Course is predominately on arc and oxy/acetylene welding and costs \$45.00. Inquire at 222-7401.
- The Rockport Apprentice Shop, Sea Street, Rockport, ME 04856 - (207) 236-6071 is looking for a blacksmith capable of making or repairing such shipbuilding tools as small lipped adzes, slicks, and plane blades. For further info, contact Mellissa Hatch.
- Please take a minute to look at your mailing label. If it is incorrect, please bring it to my attention at the meetings or at 252-3001 after 6:PM on weekdays or on weekends so we are sure of having your correct address.
- The Appalachian Center for the Crafts (Box 347 A-1, Rt 3, Smithville, TN 37166 - (615) 597-6801) needs a shop assistant to run the blacksmith's studio during the summer program. In return, there will be full access to the smithy and all blacksmithing courses taught this summer, as well as room and board.



- Ye Editor has agreed to coordinate note-taking during the Quad-State Roundup on Sept. 21-22 for at least the primary demonstrators. I need at least two people willing to take notes. These will be furnished to SOFA members either as a separate package or as part of the newsletter. I will type up the notes but will also need an illustrator. If you are a good note-taker, please contact me at 252-3001 evenings or weekends.

#### FINISHES - PART IV:

The following finishing methods were obtained by personal correspondence with blacksmiths listed as demonstrators by ABANA. Many are almost identical to those given in Parts I - III, but I left them in if the application technique was different. Part V will conclude this series in the next issue.

- Frank Turley (Turley Forge, Santa Fe, NM):

I wire brush the surfaces of all ironwork to remove all rough scale. For interior iron, I heat to a dark red to get rid of any heat rainbow colors; then, let the heat run out of the workpiece until it's about just below a black heat. Apply Johnson's paste wax for a 'baked' finish of mat black. Then, when cool, I apply two more coats of the same wax, polishing after each.

- Carol Sakowski (The Unicorn Forge, Barneveld, WI):

Flashed wax or oil: Heat metal to 600-700°F, which is a black heat. At this temperature, the pores of the steel will open properly and will suck in wax or oil applied to the surface of the metal. Above this, as in at a dark red or brighter heat, the pores are open, but too much, and no finish will be sucked into them. If the piece is to be used for eating, the finish will usually be salad oil, although I will sometimes use beeswax for this also. When the heat is right, the wax will smoke heavily when applied and will usually burst into flame. Allow it to burn out of its own accord. Wire brush well before and after application of wax or oil, using lots of elbow grease and vigor. This finish is relatively weather-proof if it is used on items kept on porches or indoors. If the piece is to be exposed to a lot of weather, it will need another finish. The flashed wax or oil finish can be kept nice by applying a coat of Johnson's paste wax every year or two if the piece will not be used for food or eating. Buff after applying flashed wax without or with paste wax to bring up the "feel".

Acrylic or clear satin-finish urethane: Acrylic comes in two kinds; regular and high heat-resistant. For pieces such as trivets, I will usually use high heat-resistant acrylic, which is available from automotive supply stores, especially those which cater to the "hot rod" crowd. If the customer uses a trivet with a flashed wax finish under a heavy, HOT, cast-iron pot, the finish will sometimes come out of the trivet. This will NOT happen with the high temperature acrylic. Use clear satin-finish urethane-like acrylic.

"Extend": This is a new product from Loctite Corp. This stuff works best if you brush it on in LIGHT coats. Two or three light coats are definitely better than one heavy coat, therefore dipping is not a good way to go. The finish is shiny black, rather than flat black, but if you use several light coats, you can sand the outer one to lessen the shine. This is a superb finish for outdoors. It can be used over light rust if you wire brush the piece first to knock off the loose rust. This is a new chemistry, which forms a polymer containing iron, and it is very durable and tough. If you like, you can seal the final coat with satin finish outdoor urethane. Extend will not hide the details of handwork IF it is applied in several very light



coats. If you try dipping the piece, it will cover the beauty of the handwork just like paint. I do not use paint on my work, EVER, because it obscures the handwork marks and details and because it does not allow the true beauty of the iron to show through. Paint makes fine ironwork look "just like the stuff from a welding shop, and (the customer) can't tell the difference". The customer said it best. ((I believe that this is the same product as the NAPA Brand "Extend Rust Treatment" available in auto part outlets which carry NAPA products. Keith Summers added a hook to the finishes test (the large one) which he first degreased and then treated with two coats of this product. - ks)).

#### DEBUNKING TWO MYTHS:

Recently two stories have been making the rounds of blacksmithing groups. One is that two welders, who wore contact lenses while welding, somehow fused them to their corneas. When they removed the lenses, the corneas also came off of their eyes. The other is that two welders were either killed or seriously injured when a welding spark hit their disposable lighter in their shirt or pants pocket. Information I have is that neither of these stories have stood up to investigation and that the latter one was started by two spelunkers from North Carolina just to see how far it would spread. A former Air Force Logistics Command Commander once had a saying that "A lie is half-way around the world before the truth gets its pants on". However, I am aware that if disposable lighters were to explode, they carry something like the power of one or more sticks of standard dynamite, so it would perhaps be prudent not to carry them on your person while welding so you don't become the documentation for that story. The same goes for carrying acetylene tanks in an enclosed vehicle. If the acetylene leaks, and encounters a spark, you may have unintentionally created a car or truck bomb.

#### HOW TO BECOME AN ABANA CHAPTER: (Included at the request of ABANA)

1. Five members of the group must be members of ABANA in good standing.
2. Send a letter to the President of ABANA requesting acceptance as an ABANA Chapter. The letter must be signed by the President of the group requesting chapter status.
3. The following items must accompany the letter: a) the names, addresses and phone numbers of the officers, b) names and addresses of all members, c) description of the territory to be included in the chapter request, d) copy of the constitution and/or by-laws, 3) copy of the certificate of incorporation, if incorporated, and f) copy of statement of non-profit status from the IRS, if applicable.

SHOP TIPS: (When a shop tip from one newsletter has been repeated in another newsletter (and I picked it up from there), the original newsletter is cited as the source. In most cases, these shop tips and techniques has been paraphrased from the original write-up or illustrations for consistency of format. While the information presented in this section (and elsewhere in this newsletter) is believed to be accurate, SOFA and ABANA bear no responsibility for injuries or other adverse actions which may result).

- I recently purchased an anvil with the most noticeable "scarred" area being around the hardie hole. The hardie hole is 7/8" square. If I were to make a hardie tool from 1 1/2" octagon without upsetting it, that would give me 5/16" bearing on each side of the hardie hole. Now, how do you suppose that the edges of that hole got depressed in the first place? Of course by pounding on a hardie tool which had only 5/16" bearing surface around that hole. There is nothing wrong in using 1 1/2" octagon or 1 1/4" hex (discarded air gun tools?) for a hardie tool. If you don't have the means to upset the stock, draw the shank out an extra 1/4" or 3/8" in length. Make a square hole washer to fit the tool shank and weld it to the hardie tool. For a 7/8" shank, this should be about 2" outside dimension. Give lots of bearing on the anvil. Hardie tools come and go - anvils should go on forever. Don't depress them. (By Dan Hawley from the newsletter of the Southwest Artist Blacksmiths' Ass'n). ((You

can also use large washers for bases. One with the center hole large enough for the shank to fit through will provide plenty of bearing area. Welding is optional. - ks)).

- An effective lubricant and releasing agent for your fullers, punches and hot cuts is that grease which is used for coating the tip of a MIG welder nozzle. It can be found at a welding supply store and comes in about a one-pound can. Heat your tool first for it to leave a thin film on the tool. It also seems to be a heat shield and thus it keeps the edge of the cutting or fullering tool from getting so hot. (By Michael Chisham from the newsletter of the California Blacksmiths' Ass'n).

- Heart Candlelabra: Start by making a heart on one end of a piece of  $3/8"$  x  $19"$  round by flattening  $3"$  slightly, leaving end  $1/4"$  alone. Split the  $3"$  of flattened stock in half lengthwise. Point the end and form into a heart. Note that this is the only heart which will be solid. Next put  $1/4"$  tenons on one end of four pieces of  $3/8"$  x  $33"$  (I use a  $6"$  lathe for uniformity) and form into a sine wave shape (visualize a  $10\frac{1}{2}"$  circle with the top folded over). Forge weld the five pieces together, first tack welding the ends to hold them together, and draw to a blunt taper (See illustration 1). Adjust arms to be consistent. Overall size should be about  $21"$  high by  $21"$  wide (See I-2). I use Dimitri Gerakaris-type candle cups out of  $3/4"$  I.D. pipe cut to about  $1\frac{1}{4}"$  long. Cut  $1/4"$  thick pieces off of  $3/4"$  round. Flare the cups out enough on the anvil horn tip to allow a candle to slip in easily. Reheat the cups and drive down over cold plugs. When cool, you can drill hole in center for a screw (See I-3). Put on drip pans and cups. Drip pans should be about  $4"$  in diameter.

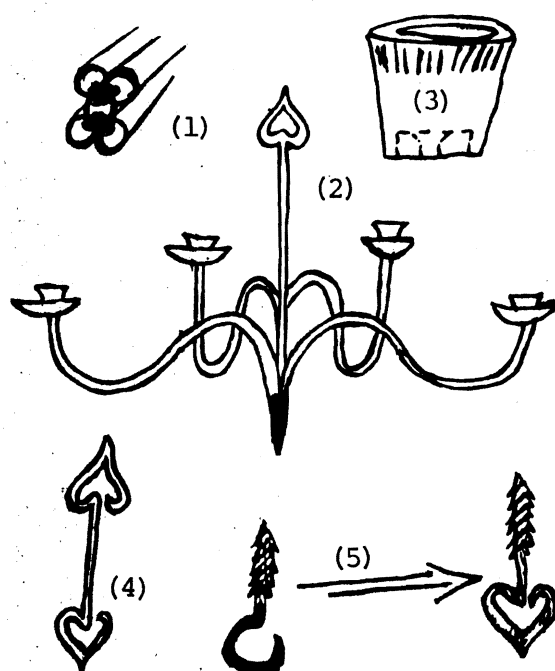
The customer for this candlelabra also wanted a heart-motif, long-shanked chain. The links were formed out of  $5/16"$  x  $6\frac{1}{2}"$  round, drawn to a uniform taper on both ends, marked, and formed free-hand with a pair of scrolling tongs until they more-or-less fit a pattern piece I had made. You must be sure the points of the hearts are centered so it hangs straight (See I-4). The ceiling hook was made out of a  $1/4"$  x  $2\frac{1}{2}"$  hook with the hook straightened out, drawn, and shaped to match the other hearts (See I-5). To put a finish on it I wire-brush the dickens out of it and put the finish on. I like flashed wax best, although I have also had good results with blueing the whole thing with brushed-on, cold blueing (you can get it by the gallon) and then using an oil-and-wax rub to make it look gorgeous. (By Carol Sakowski from the newsletter of the Appalachian Area Chapter - ABANA). ((This write-up was expanded from what originally appeared. I contacted Carol to double-check some measurements and she sent me two pages of detailed notes on the construction of the candlelabra. For a copy of the notes, send me a self-addressed, stamped envelope. - ks)).

- One old way of tempering is to take a bucket of water and cover the water with about  $1/2"$  of oil. This will temper the steel whether it is to be oil or water tempered. (From the newsletter of the Appalachian Area Chapter - ABANA).

- To keep your hammer heads on the handle, and to keep the handle from cracking or breaking right below the heads soak them for several days periodically in about five inches of kerosene. (By Joe Abele).

- On the box tongs I illustrated in the last issue, another way to make the boxes would be to use something like  $1/8"$  to  $1/4"$  using the collaring technique illustrated in the same issue (illustration Nrs. 2 and 3, page 8), without the end tapering). In

(Continued on page 12)



## PROTECTING YOUR HEARING

(Reprint from New England Blacksmith's Newsletter)

No doubt about it, to my mind the image of a blacksmith working at the forge, with the musical ciling-clang of the hammer blows audible from a good half mile off on a clear day is romantic in the extreme. From a smith's point of view, the noise of the hammer blows are an integral part of the trade.

From an audiologist's point of view, this romantic sound is a matter of great concern. Here are some figures that relate to metal working. They do not relate to the blacksmithing trade per se, but they can make you thoughtful:

Nail making machine,	103.5 dBA
Punch Press	101 dBA
Metal cut off saw	97 dBA

Any sound over 85 dBA is injurious to human ears after a sufficient time of exposure. I cannot quote the dBA levels from the operation of forging equipment. However the sound a smith is exposed to is high frequency impact noise, with the sound punching in at the human ear in a manner similar to a hurricane hitting a forest. The middle ear is composed of delicately balanced membrane, muscle, tendons, and bones with a balance so fine it has the potential of hearing a hydrogen molecule hit the ear drum. Exposing this delicate system to high impact sounds can do slow, permanent damage to the ear.

In addition, vibration effects the body with each blow. This physical vibration from the work adds to the sound vibration. The cumulative results on the human ear far exceed what damage either one alone can do. If the ear is given no chance to rest and recover from the trauma - if occupational noise and vibration is replaced by recreational noise and vibration, the damage to the ear can become permanent, or make an existing hearing loss worse.

Aspirin taken by itself can cause a temporary hearing loss. Studies suggest that when aspirin is taken following noise exposure, this hearing loss can become permanent.

Much of the previous information is new to the general public, though OSHA has been announcing it for years. The EPA had its budget dramatically slashed in 1978. There has been no financial recovery for this agency since. Health teachers claim that the schools are too busy to teach hearing safety. The latest catalogs of vocational educational films do not include any films on hearing safety. Many people feel it is overdoing it to protect your ears.

Here is a list of symptoms that can be used to check possible hearing loss from noise exposure:

- 1) Do your ears ring?
- 2) Can you hear most things fine, except in a group, in noise, when your back is to the speaker?
- 3) Do you find ear protection a nuisance because you can't hear people talking or you can't hear yourself talking?
- 4) Do you find yourself avoiding situations because people talk to softly or mumble?
- 5) Does your family nag you because you don't listen?

Not all of these symptoms are exclusively caused by hearing loss, but some or all of them are frequently expressed by people who do have trouble.

If, as a smith, you are frequently exposed to loud impact sounds, it is wise to start now using ear protection. Ear muffs with a rating of 24 dB+ are a good choice for the following reasons:

- 1) Everyone knows you can't hear well and conversation is held off until the work is done.
- 2) They are easy to put on and off.
- 3) They are not difficult to use.
- 4) You avoid outer ear infections caused by putting ear plugs in with dirty hands.

People with hearing loss have a very hard time adapting to ear protection, no question about it. It takes a real understanding of the slow and irreversible damage done by noise, a knowledge that the end result will lead to hearing aids - if you can afford them, a knowledge that even if a hearing loss exists, you don't want to make it worse, a knowledge that the human mind is adaptable and a smith can learn to work with an artificially induced hearing loss, instead of a real one.

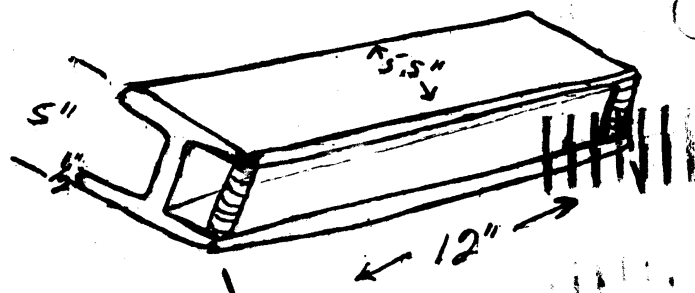
Yes, the music of hammer and anvil is romantic, but reality has a way of changing that. The wise smith protects the ears, to enjoy the reality of other music.

this manner, no welding would be required, although it would be harder to get fairly precise widths without using individual collar blocks. Also, for a better weld, the side pieces should not have been flush with the bottom of the center piece.

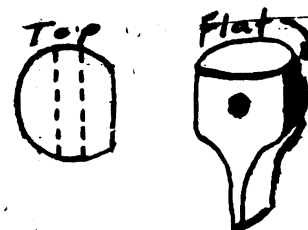
- Here are two tools I have seen used in the German blacksmith shop where I am apprenticing:

-- We have an I-beam about 12" long, 5" tall and 5 1/2" wide. The flange is 1/2". On one side at each corner is a piece of 1 1/4" round stock welded top and bottom under the flange.

We use this to bend bars. It can be used sitting on the floor or one person can hold it against work pieces while another hammers on the bar. It can be used with the work piece against the two pieces of round stock or across the flanges. I have used two pieces of railroad iron but this works better because you can hold it and move it much easier. ((It would seem like you could put the bars on both sides, perhaps closer together on one side for tighter bends, to facilitate holding it. - ks)).



-- Another good idea is to make striking tools which are held in tongs. This way you can have right or left handed tools and don't need to punch eyes for handles. The upper section of the tool is round with a flat area ground on one side and a 5/16" hole drilled through the center. Air hammer points would be good steel to make these from as the diameter is about the right size. The tongs used to hold the tools have one jaw which is round which goes through the 5/16" hole and the other jaw is about 1/4" thick by 1/2" wide and 2" long. This is forged to fit the flat spot. These work great!



(By Glenn Gilmore from the newsletter of the Appalachian Area Chapter - ABANA)

#### SOURCES:

- Solid rivets of all kinds and sizes are available from Latra-National Screw and Bolt Co. (6512 N. Clark St., Chicago, IL 60626 - (312) 465-3126).

- German-made blacksmithing tools are imported by Robert Owings (615 Second St., Petaluma, CA 94952 - (707) 778-8261 - send self-addressed, stamped envelope for brochure). The measurements are in grams and millimeters.

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