

SOFA SOUNDS

APRIL/MAY 1989



Artist-Blacksmiths Association of North America

BOARD OF DIRECTORS:

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Hans Peot, President*
Ham Hammond, Vice President*
Ken Scharabok, Secretary/Treasurer

NEWSLETTER EDITOR:

Ken Scharabok (513-429-3967)

*ABANA Board Member

MARK YOUR CALENDARS: Unless otherwise noted, all meetings will be held at the Studebaker Frontier Homestead on Rt. 202, about 4 miles north of I-70 near Tipp City. Please don't park on the grass or block access to the production buildings. Donations of items for 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 to be provided on a break-even donation plate basis.

April 1st, 1 PM

BUSINESS MEETING followed by a demonstration by Dick Franklin on working with brass and copper.

April 15th-16th

Northwest Ohio Blacksmiths Annual Conference at the Sauder Farm & Craft Village near Archbold, OH. See newsletter for further details.

May 6th-7th

Indiana Blacksmithing Ass'n Annual Conference in Tipton, IN. See newsletter for further details.

May 13th, 1 PM

BUSINESS MEETING followed by a demonstration by Doug Fink on making a Jim Batson-style horsehead. Election for several Board positions will be held at this meeting.

June 3rd, 1 PM

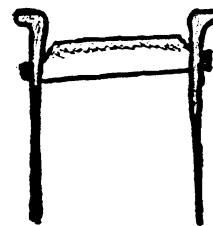
BUSINESS MEETING followed by the annual workshop to help members make hardy tools for their anvils.

September 23rd-24th

1989 QUAD-STATE BLACKSMITHING ROUND-UP.

MEETING NOTES:

For display at the February 4th meeting, John Jacobs brought along a foot scraper he made based on railroad spikes. To extend the length of the spikes he forge welded on about 6" of 1/2" square stock. The scraper appeared to be made out of 1/4" flat stock with the two sides necked down to fit through mortises in the spikes. Final assembly was by tenoning the scraper bar to the spikes.



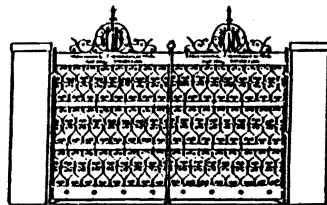
The newsletter support raffle brought in an additional \$72.00. Carey Alexander, Bob Cruikshank and Ken Scharabok won a pair of tongs, forge tools and a large

Chapter of ABANA

fork, respectively, donated by Larry Wood. Phil Trickey won a railroad spike candle holder donated by Ed Rhoades and a piece of 3" square tubing donated by John Jacobs. Dave Clouse won the book "Charleston Blacksmith" donated by Steve Roth. Ham Hammond won a nice small handmade hammerhead donated by Don Witzler, and a small cabinet donated by Ben Wunder. Steve Roth won about a dozen short lengths of 3/8" round stainless donated by James Leistner. John Baker won a shaped railroad spike donated by Ken Scharabok. Dennis Hoffer and Harold Hooper won lengths of 4140 stainless donated by Don Dunbar; Butch Sheely won a piece of 3" square tubing (for making a hardy tool) donated by John Jacobs. Ralph Van Buskirk and Bob Zeller won wire brushes donated by Carey Alexander. Paul Keller won a box of electrical connectors, Ron Thompson won a drillpress stand, Shawn Crumrine won an electric motor and Vince Barmans won an electric drill, all donated by Owen Vance. Tom Zeigler won a can of hand cleaner donated by John Baker. John Baker won a bucket of scrap lengths donated by Bob Cruikshank. Hans Peot won 302 stainless donated by Dave Clouse. Bud Rupe won a quart of motor oil donated by Ham Hammand and Ed Rhoades won a pair of eye shields and oil filter wrench donated by Ed Rhoades. As usual, thanks goes to all who purchased chances or donated items.

Following the business meeting segment, Larry Wood and others made a scroll pattern to be used to form four scrolls for incorporation into the new gate for the National Ornamental Metal Museum in Memphis, TN. Hans Peot had previously made a sample scroll out of 1/4" round to use as a pattern. The scroll pattern was forged out of 3/4" square stock to shape and then a short length of 3/4" square was welded on the bottom to hold the pattern in the vise. Once the pattern was completed, the group separated to work on the scrolls at two forging stations. Dick Franklin and Bud Rupe headed a group and the Editor and Ham Hammond headed the other. The scrolls were made out of a piece of 1/2"x1"x38 3/4" stock, tapered to an overall length of 46". The taper started at 7/16" at the center of the bar down to about 3/16" at the end. When both sides were tapered, a tight eye was formed on the end and the length scroll formed around the pattern. When one side was completed, the other end was eyed and scrolled. The final scrolls had to fit into a box area of 5 5/8" x 14". Completion of this project will be individuals making eight different rosettes to be attached to the scrolls via a 8mm hole drilled and tapped through the eyes of the scroll ends. When completed, the four scrolls, eight rosettes, scroll pattern and test box will be shipped via prepaid UPS shipment to the museum. The two gate sections require 192 scrolls and additional scrolls will be needed for adjoining fence sections.

The gate sections, illustrated at the right, will be assembled by their designer, Richard Quinnell, a well known British smith, the week of May 6th. If you would like to gain some invaluable experience in gate assembly (it involves over 700 collars), the Museum would welcome volunteer help. For further information, etc. contact their Director, Jim Wallace, at 901-774-6380.

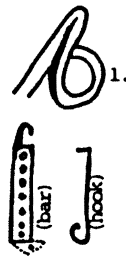


At the March 3rd business meeting the primary item discussed was an upcoming opportunity for area blacksmiths to sell their wares on a weekend at the Miami Valley Center Mall in Piqua. See details elsewhere in this newsletter.

The newsletter support raffle brought in an additional \$85.50. Larry Wood won a large machinists vise donated by Hans Peot. Dennis Hopper, Patrick Flinn and Shawn Crumrine won horseshop rasps donated by Bill Fleckenstein and someone else (can't read my own scribbling). Hans Peot won lengths of 1025 spring steel donated by Keith Sommer and Jim Leistner won a nice brass dipper also donated by Keith. John Baker won a file knife blank donated by Don Dunbar. Bill Kimmel, Larry Sinms and Carey Alexander won assorted small drill bits. Bob Cruikshank won two T-shirts and Carry Alexander won an old B&D electric drill donated by Ken Scharabok. Shawn Schwerking won an Avon bottle and Richard Knopp won two caps donated by Ham Hammond. Dave MacDonald won an axel donated by Richard Knopp. Bob Buckner won a fender apron donated by John Baker. Brian Thompson won several anvil stump staples and Patrick Flinn won hammer handles donated by Emmert Studebaker. Owen Vance won clip-on safety glasses donated by Ken Scharabok, Dave Clouse won the test scrolls from the ones SOFA is making for the new gate at the National Ornamental Metal Museum. Jim Leistner won a phone donated by Dick Franklin. Larry Gindlesperger won some type of "what is it" tool donated by Dennis Hopper. As always, thanks goes to all who donated items or purchased tickets.

Following business meeting, Hans Peot make a Jay Reakirk-sytle fireplace tripod. He started by forging a one-sided eye at one end then folding this eye over to allow an area for hammer-

ing leg into the ground - illustration 1. Two eyes were closed and the third left open with the end of the eye bent to the side slightly. This allows it to be threaded through the other two to form a tri-pod or used as a cross piece between the other two legs when they are placed on both sides of the fire. The bottom ends of the legs were pointed.



For a trammel hook Hans started with flat stock, forging one side down on the anvil corner to form a leg and then forming the leg into an attractive hook. He pre-drilled 3/8" holes in the trammel bar and then drifted them out for a hand-punched look. The bottom hole was bent over at a 90° angle. The hook part of the trammel was made out of 3/8" rod with a 90° bend in one end and the other end forged into a hook to match the top of the trammel bar. To use, insert the 90° of the hook through the offset hold at the bottom of the trammel bar and put the end in one of the holes. You may have to play with the bottom hole to get the hook to work properly.

Hans noted that Jay produces a number of these at one time and then sells them at blackpowder-type events. I believe he gets \$30.00 for the tri-pod and \$10 for the trammel arrangement.

Following the demonstration several members helped Emmert by bending a support bracket he had cut out of 3/4" plate for a yard bell.

We also finished the four scroll shapes for the museum. Concensus was afterwards we would have been better off making the scroll bending jib to produce undersized scrolls and then forming them outward until they met the sides of the shaping box rather than having to try to form the scrolls downward in size.

BLACKSMITHS TO ARTSMITHS - Vulcan's Sons Come Full Circle: (By Louise Buechter)

In ancient Europe, some 5,000 years ago, the first blacksmiths began smelting iron from ore and formed the result into useful objects. Since that time, blacksmithing as an art form flourished in Europe, but almost disappeared in America. Today, thanks to a resurgence of interest in American handcrafts, the art of blacksmithing is enjoying a comeback and blacksmiths are reemerging as artsmiths.

It took approximately 1,800 years for early blacksmiths to use iron efficiently, since the process for smelting iron and forming it into useable material is rather complex. During smelting, the ore is heated at extreme heat to separate it from minerals and other extraneous substances. The slag is poured off. The resulting iron is collected in a pooling area called a sow, then into smaller side molds, resembling piglets nursing, and thus called pigs. Pig iron, then, is plain smelted iron. The cooled pigs are then reheated and made into different types of irons or steel by adding various alloys and carbon. Cast iron is produced by remelting the pig iron with manganese - a metallic element which gives steel toughness. The resulting mixture is poured into molds of desired shape. It is used primarily for objects which are not ordinarily subjected to physical stress, since its granular structure makes it brittle. It cannot be forged (shaped or formed by hammering) or drawn (stretched and thinned by hammering or rolling under pressure). Wrought iron was made from high-grade ore or resmelted pig or cast iron. In the smelting process it was mixed with a glass-like slag or iron silicate. When forged into shape, the iron/silicate mixture became tough and fibrous. It can be shaped, drawn and forge welded, and is resistant to corrosion and stress.

Before the discovery of smelting, iron was obtained from meteors and used only for making jewelry, ceremonial weapons and various small tools for working with alabaster, marble, and precious metals due to its scarcity. (Legend has it Jim Bowie's famous knife was forged from a meteor - ed.) Around 2,700 BC, primitive iron workers, or blacksmiths, had discovered the melting temperature of iron and had begun smelting iron from ore and casting tools and other objects. As these early smiths continued to experiment and gain knowledge, they were able to produce greater quantities of iron. By 900 BC, iron articles in general use included jewelry (pins, rings, necklaces, bracelets), utensils (pots, pitchers, ladles, spatulas, buttons, belt buckles, tweezers), agricultural items (saws, nails, sickles, hoes, pitchforks) and weapons (arrowheads, knives, helmet earflaps). Iron gradually became indispensable. As the blacksmiths' knowledge increased, so did their standing in the community. Blacksmiths were held in high esteem and made even common articles with skill and attention to detail. The blacksmiths' craft developed its own trade secrets and traditions.



Blacksmiths enjoyed a certain mystery and some cultures honored blacksmith gods. In Scandinavia - Thor of the great hammer and iron gloves; in Greece, Hephaestus, who formed the armor of Achilles; and, in Rome, Vulcan, who built the palaces of Alympus. As civilizations advanced, the demand for iron objects increased. Decorative ironwork began to be applied to buildings. During the 11th, 12th and 13th centuries, the most notable product of the blacksmiths' art was the iron-work made for doors, which reached the highest standard of technical skills. Such work included locks (and keys), hinges, handles, door knockers, and for buildings, grilles, gates, fences and decorative lamps. Throughout the centuries, blacksmiths continued to use artistic skill to beautify even common objects.

By the time the first colonists set sail for the New World, the Iron Age was in full swing and blacksmiths were key members of every community. The first party of settlers who came to Jamestown, VA in 1607 included a blacksmith by the name of James Reed. By the end of the very next year, another smith was needed, and, in 1611 to meet the growing demand for ironwork, four more smiths were sent over from London.

Blacksmiths produces everything made of iron. For the carpenter, they made nails, latches and hinges. For the farmer, they made farm implements, ox and house shoes and harness hardware. For the housewife, they made needles, fire-place utensils and scissors. For the gunsmith, they made bayonets, sights and triggers. For the logger, they made chains, hooks, saws and axes. For the cooper, they made barrel hoops. For the wagon maker and shipwright, they made screws, wheels, springs, and fittings. For themselves, they made hammers, chisels, tongs and a variety of tools needed to make ironwork for other trades. The list is endless. When not making something, smiths were repairing breaks or melting down and remaking work items.

The blacksmith shop itself was a place where people socialized and exchanged news while they waited for ironware to be made or repaired. Often smiths were given land, a house and shop space as incentives to settle within communities. Blacksmiths of this time period were also instrumental in helping the Union with the Civil War (the North had more smiths making firearms) and in the settlement of the Western territories. (Valley Forge was really Valley of the Forges - a concentrated area of gunsmithing - ed.)

Despite the insatiable demand for ironwork, blacksmiths essentially remained artists. By inventing new tools and methods in order to shorten working time, smiths still managed to produce hand-wrought ironware which was functional, yet eye-pleasing.

At the turn of the 18th Century, all this began rapidly changing. Between 1830-1840, new methods for making iron and steel and the development of steam-powered hammers introduced the era of mass production. Unable to compete with such innovations, most smiths abandoned small village shops in order to develop and maintain factory machine tools and equipment, or to start manufacturing companies of their own.

As the Industrial Age advanced, other factors, stimulated by increasing use of machinery, contributed to the rapid decline of the blacksmithing craft. In the factory, the division of labor reduced skilled smiths to skilled machine tenders. As jobs became more simplified, blacksmiths faced yet another threat - children. In the period from 1850-1870, the division of labor increased the opportunities for children to work effectively in competition with adults. After some brief training on a machine, children could operate it as efficiently as a man. Child labor was cheap and many smiths found they had lost more than status, they also lost their jobs. Fortunately, child labor laws and labor unions soon reemployed many smiths, but for the most part, blacksmiths remained displaced artisans until the beginning of the 20th Century.

In the 1920s, a Polish immigrant named Samuel Yellin began to reestablish blacksmithing as an art in America. Before his death in the 1940s, Yellin was considered to be a true artist in iron. His work lives in the magnificent Children's Chapel Gates at the National Cathedral in Washington, DC; at the Bok Tower in Lake Wales, FL with rails and gates reflecting both nature and whimsical humor; and in such private mansions as the Stout House in Chicago, where gates, chandeliers, scones and fireplace equipment provided an important part of the background for the gracious living found in this home.

After WW-II, interest in blacksmithing, inspired by Yellin's work, began reviving slowly. Then, in 1966, twenty blacksmiths met in Lumpkin, GA to form a national organization in order to keep blacksmithing alive. Their effort resulted in ABANA - the Artist-Blacksmith Association of North America, which now has 33 chapters and 2,750 members.

During America's Bicentennial in 1976, Americans became intrigued with old crafts and techniques. Muzzleloading weapons and "black powder" primitive camping became popular, providing new demands for the skills of the blacksmith. Once again, smiths became artists, putting quality, character and diversity into the objects they made.

Most of today's blacksmiths are true artists having a "feel" for lines, curves and proportions, and using iron as a medium. Some are already well-known in America in specialized areas, such as Francis Whitaker's and Nol Putnam's traditional techniques and motifs in their gates, grills and arches; Dorothy Stiegler's lifelike flowers; Dan Boone's medieval dragons; Peter Ross's 18th Century ironware; Tom Joyce's Spanish ironware; Albert Paley's modern architectural metalwork and sculptures; and a number of artists using Damascus-pattern metal in knifeblades and jewelry.

Blacksmithing is an art which has been in existence for thousands of years. It is a fascinating craft which will continue its existence for as long as there is black iron to forge. The young blacksmiths of the 20th Century - the artists who have rediscovered the fascination and psychic satisfaction of ironworking - are growing in numbers. This enthusiastic band will save the sounds, the smells, the visual joys of the blacksmith as a human heritage for generations to come.

(This paper was adapted from one submitted as a class project by Louise. For a list of her reference work, send a SASE with 25¢ postage to the Editor).

ON DE HITTING OF DE METAL:

Since becoming associated with SOFA, I have had the opportunity to watch a number of folks work at the forge. My personal observation is there is a strong correlation between a person's success and how hard they hit the metal (and its related temperature). As Francis Whitaker is quoted as saying, "Noone made any money hitting cold iron". I'll go farther and say noone made any money using only one stroke - the finishing one. I've seen too many folks trying to move a mass of iron by tapping away at it. You'll eventually get there, but you will also probably burn yourself out or lose interest in the process. There are three basic hammer strokes:

- The Forging Stroke: The forging stroke is used to move metal in a hurry and consists of using primarily the shoulder (with the elbow held in towards the body to help prevent blacksmith's elbow). Basically, this stroke consists of hitting the S.O.B. **HARD!!!**

- The Shaping Stroke: The shaping stroke is used once the metal has been formed to near shape desired and primarily uses the elbow. Here you are going for more control than the forging stroke. Again, hold the elbow to the body.

- The Finishing Stroke: The finishing stroke is used to fine tune the work and primarily uses the wrist. This is the tappity-tap stroke.

Many tasks will consist of using the three basic strokes in sequence. While I have a 2 lb, 2½ lb and 3 lb hammer at my anvil stand, I find I do probably 95% of my work with the 2½ pounder.

Ken Scharabok

LETTER FROM THE EDITOR:

I will not be running for the positions of Newsletter Editor, Secretary/Treasurer or General Gadabout at the May elections in order to pursue other, more pressing, matters. Thus, we need volunteers to step forward as these positions are essential to continued group operation. Whatever skills I have as an Editor may not be lost to you as I have applied for the position of Editor of The Anvil's Ring.

It is been fun to have served S.O.F.A. these past five-some years. I have learned far more about blacksmithing than I would have by just being a member. I sincerely appreciated the compliments paid to me during this period. Thank you!

Ken Scharabok

NOTE!

ABANA

Artist-Blacksmiths' Association of North America



P.O. Box 1181, Nashville, Indiana 47448
Executive Secretary, Janelle Gilbert

Office Hours: 7:30-11:30am & 1:30-4:30pm
Phone: (812) 988-6919

PRESIDENT'S MESSAGE TO THE CHAPTERS FEBRUARY 1989

About 450 miles from Dayton area

Another year behind us and full steam ahead into the next! The 1990 Conference will be held at Alfred State University conference site (about 75 miles west of Elmira, New York). The ABANA board will participate heavily in this conference and all future ABANA international conferences as never before in order to put together an international conference that speaks of the greatest blacksmith organization in the world. We of the board need to set standards with guidelines and participate in the work.

1990 Conference Committee Chairman is Michael Bondi (ABANA 1st Vice President) and the conference committee co-chairmen are Charlie Orlando and Steve Joslyn from the New York Designer Blacksmiths Association - Chapter of ABANA (NYDBA). Orlando and Joslyn have already had two very productive planning committee meetings and we intend to give them all of the help and support that the board can. Any suggestions concerning demonstrations or educational topics that you wish to see at the 1990 Conference would be greatly appreciated. Please send all materials to Michael Bondi, 1818 Shorey Street, Oakland, California 94607. Michael Bondi will organize all of this information and pass it directly on to Orlando and Joslyn. To organize and successfully run a conference of the size of the 1990 event will take some serious legwork. So far we have the drive and the manpower to make this the very best conference yet.

It isn't too early to be thinking of the 1989 ABANA director elections. The continued success of ABANA will be contingent upon a hard working board. Please contact Janelle Gilbert at the ABANA Office for details if you are not already familiar with the procedures. We will be running an ad in the Anvil's Ring to alert you to the coming election, however there are only two quarterly magazines yet to come out before the election.

The voting on the bylaw clarifications will be coming out with the ballot for the 1989 election this summer. This joint mailing will save ABANA several hundred dollars and every penny helps.

I encourage you to contact Ward Brinegar, 1709 West Charles Street, Grand Island, Nebraska 68803. Ward is your new ABANA Chapter Liaison and has a very fine committee set up with goals to assist all of us in a better working relationship. Please refer once again to your November memo (mailed in a January mailing) for specifics concerning his committee. I really hope that you will take advantage of this ABANA committee which was set up specifically with the chapters in mind.

My very best to all of you,

Dorothy Stiegler
Dorothy Stiegler
ABANA President

DES/jrg

PRESIDENT'S MESSAGE TO THE CHAPTERS MARCH 1989

It's nearly Easter and I'm just recovering from Christmas! ABANA's Finance Committee Chairman, Joe Harris, tells us we look pretty good as we close the gap on the first quarter of 1989. However, as Joe points out it has taken us almost two years to recover from a long line of less careful financial planning, therefore it's going to be imperative that we watch every cent and keep in close order the business transactions of ABANA. As a non-profit organization answerable to the IRS, we often run into situations whereby we have to clarify more closely and account more clearly for expenditures. With the help of our accountant Ed Hirrold and

hard work of Bill Callaway and finance committee, we have been learning what some of these ramifications entail. As we move into 1990, we will be rewarded by ABANA's ability to apply for grants through organizations similar to the NEA. It is our hope that we can help all members look forward to receiving grants in the future.

Library Director, Joe Pehoski has done a fantastic job getting the library squared around. There's still an awful lot of work to be done, however Joe tells me in the near future it is his goal to have the rental fees for videos and slides substantially reduced. While we don't want to count our chickens too soon, I'm sure that before the year's out we will be able to do this for our members.

Executive Secretary Janelle Gilbert tells me that the sales of the Sears Roebuck catalogues and cast anvils were a rousing success. Unfortunately they are all gone now and those chapters who were able to take advantage of this terrific offer made out like bandits. Janelle tells me that we have a supply of baseball caps left over from the Sloss Conference. As soon as they are sufficiently inventoried and the board can decide on a fee, it's hoped that we can offer these caps at substantially reduced prices so they can be used as a fundraising item. More on that next time.

It is not too soon to be thinking about who you would like to nominate for the five positions on the board of directors which will be coming up in the fall elections. If you have any questions on the nomination procedures, please contact Janelle at the ABANA Office.

Please take advantage of the benefits of the Chapter Liaison Committee headed by Ward Brinegar. Ward will be working very hard to update relations between the chapters and ABANA. He is a direct link to the board and is accessible at all times. You may contact Mr. Brinegar at: 1709 West Charles St. Grand Island, NE 68803, phone - (308) 381-7817.

Sincerely,

Dorothy Stiegler
Dorothy Stiegler
ABANA President

DES/jrg

LIVING HISTORY SMITHS PROMOTE ABANA; HELP SOUGHT

Those of us who work in living history museums, public parks and the like have a unique opportunity to serve on the front lines in promoting ABANA. We see the public daily, and it's our job to talk about blacksmithing with them. While we're doing this it's often a natural part of the conversation to talk about the resurgence of blacksmithing and the role ABANA has played in this regrowth. I keep a stack of ABANA brochures in the shop to pass out to anyone who's interested. It's worked, too; a significant percentage of the ABANA members in Nebraska joined as a result of visiting Stuhr Museum and talking with me.

As an ABANA board member and a component in the famous NOL'S NETWORK, I'm asking all of you who work in a situation where you're with the public to keep some ABANA brochures around to pass out. It may not always work easily if you're in a strict first-person interpretive setting, but there are unobtrusive ways to share our organization with those who are seeking.

If you'll drop me a post card (1709 West Charles St., Grand Island, NE, 68803), I'll be sure that a supply of brochures is mailed to you. Please help ABANA in this way. Thanks,

Ward Brinegar

WB/jg

(EDITOR'S NOTE: Ward is the new ABANA Chapter Liaison and has hit the ground running. If blacksmithing is to continue its resurgence, ABANA needs to lead the way but needs the funds, through membership growth, to do so. Please give ABANA a boost by keeping brochures available for both ABANA and local chapters. However, it is suggested they be kept to be given to those who are interested rather than just being given away.)



HEAR YE! HEAR YE! HEAR YE!

FOR SALE: Blacksmithing tools, including anvils, tongs and powerhammers. Contact John Steel, Freedom, PA - 412-774-6754.

Brass brushes (to give that brassy look to your ironwork) are available from West Penn Brush Co., 4103 Penn Ave., Pittsburgh, PA 15224 - 412-683-6363. Their model #108-5 has a shoe handle and sells for \$3.60.

The Summer Metal Workshops at the Arrowmont School of Arts and Crafts (Box 567, Gatlinburg, TN 37738 - 615-436-5860) will be: June 19-23, Mark Bokenkamp, Forged Metals and Sculptural Forms (with emphasis of the possibilities of forged metals incorporated into other metal work or into a new medium); June 26-July 7, William Fiorini, Jewelry Forging Techniques; July 10-14, Martha Banyas, Rendering Techniques for Enamel and Leslie Leupp, Aluminum Anodizing, Resist Techniques and Beyond; July 17-28, Eleanor Cladwell, Metal Techniques for the Jeweler and August 7-11, Susan Hamlet, Jewelry-Connections and Mechanisms and Harold Helwig, Enameling - New Concepts for Old Techniques - Intermediate to Advanced. Tuition is \$150 per week. College credit is available. Deadline for assistantship and scholarship applications is April 1st.

The Currier Enterprises (P.O. Box 193, Haverford, PA 19041) is a design firm interested in hand-forged hardware. If you are interested in dealing with them, send an illustrated catalogue or wholesale price list, and ordering information including: minimum quantities, availability, bulk discounts and payment terms.

BLACKSMITHING APPRENTICESHIP: One year; general, all-around blacksmith shop making gates, handrails, furniture - work in iron and bronze using handforming, power hammer and modern metal working techniques. Contact Craig Kaviar, Kaviar Forge, 147 Stevenson Ave., Louisville, KY 40206 - 502-561-0377. I think lodging may be available at the worksite.

The 1989 Northwest Ohio Blacksmiths Annual Conference will be April 15-16 at the Sauder Farm & Craft Village, Rt. 2, Archbold, OH. Demonstrators will be Mike Bendele, full-time smith at Sauders and Duane Wegley. Duane will be doing a basic, hands-on workshop. For further info, contact either Don Witzler at 419-874-6576 or Butch Sheely at 419-352-5864. These folks always put on a nice event.

The 1989 schedule for PENLAND SCHOOL (Penland, NC 28775-0037 - 704-765-2359) is: May 15-19, Dorothy Steigler - Forming Flowers and Rachelle Thiewes and Richard Mawdsley - Jewelry; May 22 - Jun 2, Glen Zweygardt - Sculpture, Mel Someroski - Enameling and Randall Gunther - Titanium Anodizing; June 5-16, Jay Burnham-Kidwell - Forging and Sculpture, Marcia Lewis - Chasing and David Tisdale and Christina Depaul - Anodized Aluminum; June 19 - July 7, Joseph Pehoski - Sculpture, Mac McCall - Jewelry and Elliott Pujol - Metal Forming; July 10-21, James Rubley - Blade-making, Glenice Matthews - Enameling and Fred Fenster - Pewter; July 24 - August 9, William Harsey - Toolmaking, Sydney Jo Scherr - Enameling/Metals and John Cogswell - Jewelry; August 14-25, Douglas Wilson - Blacksmithing and Mary Ann Scherr and Michael Good - Jewelry and August 29 - September 1, Robert Owings - Design and Marketing and Chris Correia and Jan Brooks Loyd - Jewelry. Registration runs from \$200-\$450 per class. Room and board runs from \$145-\$410 per week.

The group order for copies of Early American Wrought Iron was received and the book is a dandy. Contains hundreds of illustrations. Individual copies can be obtained from Publishers Central Bureau, One Champion Ave., P.O. Box 20280, Newark, NJ 07101-6280 for \$17.95 plus \$3.95 S&H - catalog #27793X. Credit card orders can be placed to 800-772-9200, Ext. 356. When asked, subkey is W87 (catalog I.D.).

FOR SALE: Castiron rivet forge with blower (needs work) - \$25. Contact Ken Ullery, Trotwood, OH - 513-637-2408.

SAFETY FIRST!!!!!! In the Jan 89 issue of the newsletter of the California Black-Smith Ass'n, Bob Thomson indicated a ground fault interrupter (GFI) receptacle in his new shop may have saved his life when he tried to use an angle grinder which was improperly wired (the metal casing was HOT). While GFIs are expensive (\$16 and up), only one is needed at the first outlet as it protects all other outlets on that circuit.

PRODUCTS WANTED: Consignment or wholesale prices for household-type, hand-forged items. Contact Lorley Hodkins, P.O. Box 563, Coloma, CA 95613 - 916-626-5541.

If you are building your own forge, a good source of electric blowers is Burden's Surplus Center Equipment Catalog, P.O. Box 82209, Lincoln, NE 68501-2209 - 800-228-3407. One 200 CFM blower (Item #16-922) is \$16.98 plus UPS.

NOTE!

The John C. Campbell Folk School (Brasstown, NC 28902 - 800-561-1111) will hold an Intermediate to Advanced Blacksmithing Class from April 2-12. Peter Rezzetti instructor. In this course students will learn to design, forge and install various types of hardware and ironware in residential buildings, as well as in restorations of historic buildings. Room and board on grounds is available.

SOFA has the opportunity for several of our members to sell their wares at the Miami Valley Center Mall in Piqua in late April or May. The mall will advertise the event and collect a percentage of the gross sales in return. They say they have an excellent traffic flow who are willing to pay for hand worked material. Dick Franklin, 233-4847, has agreed to coordinate the event. If you are interested please contact Dick ASAP since we need six to eight smiths selling to make it worth while. This is an excellent opportunity to sell your work and perhaps pick up commission work.

The Bethel Colony School of the Arts (Box 127, Bethel, MO 63434) will conduct several 4-6 week blacksmithing courses this summer, Bob Patrick (1989 Quad-State Demonstrator), instructor. Classes will be April 30-May 28, June 18-July 31 and Sept 3-30. Bob will also teach a knife workshop June 2-4. For further information contact them at 816-284-6493. Room and board in Bethel is available.

The 1989 Southeastern Regional Blacksmithing Conference, May 19-20, Madison, GA, promises to be another excellent event. They have lined up Jerry Darnell, Peter Happy, Clifton Ralph, Peter Ross and a group of traditionalist from the Rural Smiths of Mid-America. The family event will rival the blacksmithing demonstrations. For a registration package contact Stan Strickland, 1147 Dantel Court, Stone Mt., GA 30083 - 404-469-3326. I understand tools sell very well down there.

Received a request from one of our members for either a demonstration of or a newsletter article on making wood carving tools. If you would like to assist, please contact the Editor.

Larry Wood has started his Introduction to Blacksmithing classes at his shop on Fishburg Road in Huber Heights. For a schedule, contact Larry at 233-6751.

BUSINESS OPPORTUNITY - The Mountain Ironworks and Gallery in Minturn, CO is available for sale or lease. The owner is open to inquiries and offers. Operating business at \$250,000 gross in large resort area. State of the art equipment and tools. Gallery, office, and kitchen area. A turn-key operation offering a national reputation, current customer list, and extensive prospective customer list. Inquiries should contact Sydney Summers, P.O. Box 460, Minturn, CO 81645 - 303-827-5881.

The Colorado Rocky Mountain School in nominating Francis Whitaker for the Heritage "Living Treasure" Award from the National Endowment for the Arts. They would like to include Letters of Recommendation to support his nomination from blacksmiths Francis has had a large influence on in the past. Send letters addressed to the Endowment in care of Tina Santacroce, CRMC, 1493 County Road 106, Carbondale, CO 81623.

WANTED - FARM MANAGER: 60 acre educational organic farm. Requires skill with organic crops/livestock, building and machinery maintenance, ability to speak to tour groups. Contact Charity Krueger, Aullwood Audobon, 100 Aullwood Rd., Dayton, OH 45414 - 513-890-7360.

The 9th Annual Indiana Blacksmithing Ass'n Conference will be on May 6-7, 1989 at the Tipton, IN fairgrounds. Demonstrations will be under shelter and restrooms with showers will be available. Demonstrators will be Bob Bergman, Jay Rearkirk and Roy Bloom. As usual, they will have an auction, Iron-in-the-Hat Drawing, door prizes and other activities.

FOR SALE: 50 lb Little Giant in good working order. 220v, single phase, 1 or 1 1/2 hp motor. \$1,200 delivered - now out West. Contact Richard Kern - 513-372-9100 (Kenia).

FOR SALE: 25 lb and 50 lb Little Giants and 50 lb Perfect Brand powerhammers. Contact Russell Cashion, 720 Bell Rd., Antioch, TN 37013 - 615-834-3215.

FOR SALE: One horsepower motor, 3450 rpm, in EC. Contact L.L. Long, 615-894-0772 (Central Tennessee area).

FOR SALE: Small-scale blacksmith shop including truck brake drum forge with ashshaker, electric blower, airdamper, ashdump, tool table and hood; 112 lb Mouse Hole anvil (reconditioned) with stand, tool rack, hot cut hardy, hardy mandrel and holdfast; two forging hammers; 20 pairs of assorted tongs, 4" jaws leg vise and about 400 lbs George coal - \$500.00. 105 lb Trenton anvil (really rings) with stump stand, tool rack, hot cut hardy, hardy mandrel and holdfast - \$160.00. Heavy duty forge with Zeller firepot, electric blower, airdamper, hood, 2'x3 1/2' table area and tool shelf - \$200.00. 36" high solid cone mandrel, 140 lbs - \$200.00.

SHOP TIPS AND TECHNIQUES: (The following were, for the most part, paraphrased from other ABANA Chapter or affiliated group newsletters. While the information presented herein, and elsewhere in this newsletter, is believed to be accurate, neither SOFA nor ABANA assume any responsibility or liability for the accuracy, fitness, proper design, safety or safe use of any information, technique, material, tool design, use, etc. Use is solely at the user's own risk.

- WELDING CAST IRON: Cast iron should be preheated to approximately 950°F before it is welded - that also happens to be the temperature at which spit bounces off the hot metal. (By Ron Bishops from the newsletter of the Michigan Artist Blacksmith ASS'N).

- BLOWER: A used cannister vacuum cleaner blower with a standard 600 watt light dimmer makes an excellent variable speed blower. Mine is going on its third year now. It has more pressure and volume than needed. (By Clayton Spencer).

- DEHOODING: A forge hood is not really necessary. A 12" diameter pipe (at least 12" long) mounted so it is about 15" directly above the fire is better than any hood I have seen. You have to keep the flames directed towards the pipe and the pipe has never interfered with my iron in the fire. It has a very high draft and sucks most of the ash out. The shop is much cleaner than with a regular hood. (By Clayton Spencer).

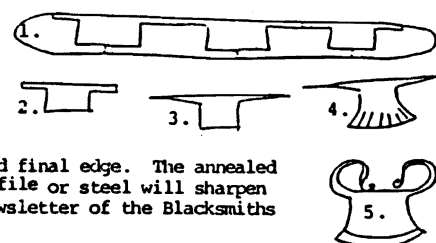
- WELDING IN A VISE: To simplify welding the ends of rod together in the vise, hold both sides with spring-type clothespins. The pins grip the rod securely and hold the rods away from the vise jaws. (Adapted from an item in Progressive Farmer).

- MAKING A CABLE KNIFE: For a demonstration I forged a knife blade out of steel cable, also known as "Poor Man's Damascus". The cable was good, clean steel, fine stranded and tough. First the cable was heated red hot, then placed in the vise where the twist of the cable was tightened even further by the use of tongs. Then, after fluxing, the cable was brought up to welding heat (remember: it was good steel, the heat had to be kept low!) and welded gently into a square bar - don't worry about a perfect weld at this point, but try to get it stuck and in proper shape. Then, reheating the bar, welding was continued and at the same time the bar was flattened to a ribbon. At this stage, a perfectly good knife could be forged, but I feel folding the bar to four or five thicknesses helps to refine the steel, and also produces a "Lizard Skin" or cellular pattern instead of longer, broader lines. Here, I began to fail in fine form! In forming the folds, I neglected to slightly crown the mating surfaces, and hurriedly and absentmindedly overlooked. The results were predictable! The old "Lays Syndrome" struck! (That's where the steel puffs up in a bubble like the center of a potato chip!). In real practice, by cleaning the surfaces and slightly crowning mating surfaces, and observing good welding practices, welding of steel cable is extremely easy and reliable. At any rate, after chiseling out the slag, the piece was rewelded and folded again, which would actually produce a pattern much finer than I desired. At this point, the blade was drawn to about 1/4" thickness and roughly 3/4" wide and the point was hammered into a spear shape. Then, a slight curve was put into the blade opposite the desired curve of the finished article. Upon hammering the edge thinner and forming the bevels, the stretching of the metal produces a curve in the desired direction, and a skinning profile blade resulted. While the blade wound up sound and solid, the process was much more aggravating than it should have been! However, cable can be an excellent and very rewarding medium for the forging of a good, beautiful blade! (By Robert Timberlake from the newsletter of the North Carolina Chapter - ABANA).

- MARKING METAL, TOOLS, ETC.: Mix well 1/2 ounce of nitric acid and one ounce of muriatic acid. Coat the place you wish to mark with melted beeswax; when cold, write plainly in the wax, clear to the metal, with any sharp-pointed instrument; then apply the acid with a feather, carefully filling each letter. Let it remain for 1-10 minutes according to the appearance desired, then throw on water which stops the process of cutting and then remove the wax. All acids should always be handled with extreme care!!! (From the newsletter of the Kentucky Blacksmith's Ass'n).

- RIVET HOLE PUNCHING: When punching (hot) for a rivet, instead of trying to fit a cold rivet into a hot piece of metal (and frying your hand in the process), put the rivet into the hole and head down. Then, punch the hole and trial fit it over the rivet head. (By Paul Ambruster from the newsletter of the Tullie-Smith House Blacksmith Guild).

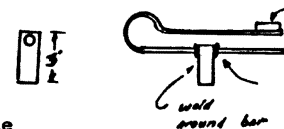
- VEGGIE CHOPPER: These choppers are made from the most common resource of the Ozarks, leaf springs from abandoned vehicles. Mark your pattern on the spring and cut them out with a torch. Grind off the burned edges. Draw ears out to a point. Form blade using crosspeen to spread at cutting edge. Turn tapers to taste, anneal, wire brush and grind final edge. The annealed edge is just fine for this type of tool. A file or steel will sharpen it nicely. (By Doug Hendrickson from the newsletter of the Blacksmiths Ass'n of Missouri).



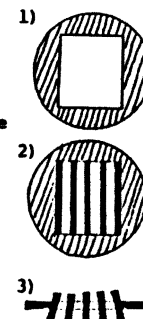
- USING WIRE BRUSH WHEELS: When using a wire wheel always use some type of eye protection. Wires can break and fly like arrows in any direction. Only the very ends of the wires remove dirt, rust or scale. If you push too hard against the wheel, the wires bend over and do not scratch as efficiently. About once a month take the wire wheel off and turn it around. This changes the direction the wires bend, improves efficiency, and the wheel will last longer. (From the newsletter of the Guild of Metalsmiths).

- USING SPRAY PAINT CANS: If the paint cans are stored in a cool place (below 50°F) it helps to warm them up before you start to paint. I warm them in water about 110-120°F. This will increase the pressure in the can a little, warm the paint and keep it from running. Make sure the water is not hotter than you hands can stand. (From the newsletter of the Guild of Metalsmiths).

- SPRING FULLER HARDIE ATTACHMENT: In a recent issue of the newsletter of the California Blacksmiths Ass'n, Jeff McBride presented a novel way to attach a hardie shank to a spring fuller. He used 5/8" coil spring and drew it out by heating a section, placing it over a pipe in the vise and pulling it straight. The spring fuller was made in the usual way of flattening about 8" near the middle and folding over to align. For his hardie shank he cut a piece of square stock to fit his hardie hole, drilled a 5/8" hole about 1/16" inch from the top, slid it over the bottom fuller bar and arc welded it in place. To provide a larger surface for hammer blows, he also welded a small piece of mild steel to the end of the top bar. Since you would be welding higher carbon to mild steel, stainless steel welding rods should probably be used.



Mitch FitzGibbon had a project requiring a large fire with lots of heat and the standard firepot would not serve his needs adequately. The project was to make the anchors (over six feet high when finished) for the restoration of a 16th century sailing vessel berthed at Mayville, NY, at the head of Chautauqua Lake. The solution to this problem was to fabricate his own firepot with a special grata which would provide the large fire, cool itself so as not to burn with the long heating time required by the heavy iron, and provide lots of air through the openings for proper combustion of his coke fire. Mitch used ordinary mild steel for this grate and experienced no burning because of the large air blast which had a cooling effect. He started with a piece of flat stock approximately 5/8" thick and 14" in diameter. All measurements are approximate and can be adjusted to individual needs. He then cut out the opening where bars would be welded in place to create the grate. Illustration 1 is the top view of the opening cut out of flat stock. Illustration 2 shows the five pieces of 5/8" x 4" flat stock welded on edge to create the grate. Illustration 3 is an end view of the grate. The center plate was welded in vertical. Adjoining plates were welded at slight angle - wider space at bottom than at top so clinkers will not lodge between them. 2" to 2 1/2" of the plates protrude from bottom to act as heat sinks allowing the incoming air blast to cool the grate. (By Charlie Penoyer from the newsletter of the New York State Designer Blacksmiths.)



- BENDING PLIERS: If you get an old cheap pair of needle-nose pliers from the flea market, you can make a nifty pair of bending pliers by merely grinding off any signs of teeth left on the jaws, polishing off the grind marks and you're all set. They work very well, especially on small pieces like vines and leaves. (By Mike Shaffer from the newsletter of the Tullie-Smith House Blacksmith Guild).

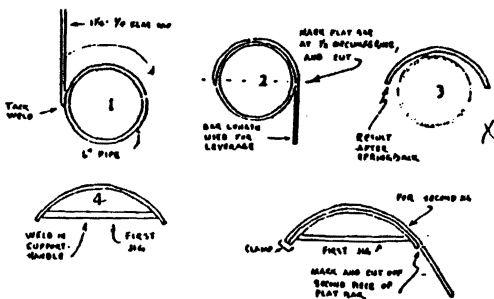
- HEXAGONAL STEEL ROD SOURCE: A really good, cheap source of hexagonal steel rod is the center support rod found in conveyor rollers. I don't know the steel composition, but it's nice and cheap! (By Mike Shaffer from the newsletter of the Tullie-Smith House Blacksmith Guild).

- HEART TRIVET: Here is a good craft fair item which is a proven seller. Material required: 1/4"x1/2"x16" mild steel bar. 1. Draw each end to a 3" taper, maintaining the 1/2" width. The bar should now be 18" long. 2. Knock off all corners and round and file the ends. 3. Find the center of the bar and bend the thin way to almost 90°. Upset the corner using the vise or anvil edge to be a fairly square corner. 4. When corner is upset, make sure the arms have not twisted. The vee should now lie flat on the anvil without rocking. 5. Smooth corner and edge with hammer and file. 6. Heat each arm separately and bend around a scroll jig or eyeball over the anvil horn. 7. When both scrolls are finished, heat entire trivet. Adjust with hammer and anvil, or quench the point of the heart and place it in the vise and adjust the scrolls with a scroll tool or needle-nose pliers. 8. Brush off the scale and finish with clear acrylic spray or paint with black paint and wipe it off while still wet. Follow with paste wax. (By Ron Washburn from the newsletter of the Inland Northwest Blacksmiths Ass'n).

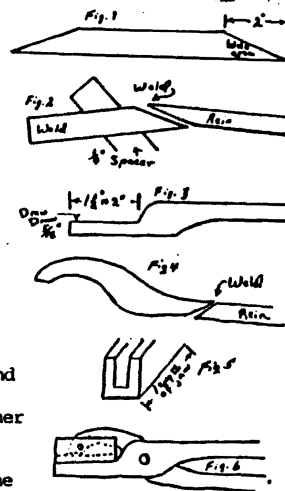


- TEMPERING WITH LEAD: The melting point of lead can be adjusted by adding tin. Since tin is expensive, don't add more than you need to get the melting temperature you want. This can be estimated using the following in the sequence of melting temperature F° /parts lead by weight/parts tin by weight: 420/7/4, 470/21/8, 520/6/1 and 570/30/1. (By Monty Day from the newsletter of the Inland Northwest Blacksmith Ass'n).

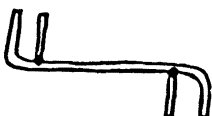
- BENDING JIG: The following jig can be used to get almost any curve you want. What is basically is flat bar bent cold around a pipe. The sizes of the pipe will give you larger or smaller curves, depending on what you want. The flat bar, when bent cold one-half way around the pipe will have "memory" or spring back, creating a larger curve than the pipe which it was bent on. The next piece of flat bar is then bent cold around the first piece of flat bar (the one bent on the pipe), creating a larger curve still. The process is continued giving a larger curve each time. Weld support handle in each jig. All bends are cold! (From a demonstration by Beau Hickory as reported in the newsletter of the California Blacksmith Ass'n).



- SELF-ADJUSTING BOX TONGS: It is sometimes necessary to hold material which is not flat. The tongs have a hinged box on the top jaw plate which adjusts its angle to fit different thicknesses of stock as well as tapered stock. This makes into small size of tongs; but by increasing stock size you can make larger sizes. Start with a piece of 3/16"x1"x10" and draw ends out about 2". Fold in half and weld both ends together. Separate the inside area and insert a 1/4" spacer bar. For a rein use 3/8" round 12" long. Taper one end to fit the taper area and weld it on. Now flatten about 2" of the other end, weld and draw it down to 5/16" in height to result in a jaw length of 1 1/2" to 2". The top of the jaw may be fullered to hold round stock if desired. Form upper jaw as in Fig. 4 from 1/4"x1"x6" flat stock. Weld on reins and adjust shape by putting it through the opened area in the bottom piece for testing. Form upper jaw plate out of 3/16"x2"x2 1/2" into a channel 1/4" wide inside as in Fig. 5. Face may be fullered for round stock. File hinge surfaces smooth, fit jaws, drill and use a 1/4" rivet being careful not to force the joint area together too much so they still have play. Now fit on the top jaw box by aligning, drilling and using 3/16" rivets. Again, be careful to leave play in the joint. (By Dave Hartwig from the newsletter of the Upper Midwest Blacksmiths Ass'n - ABANA).

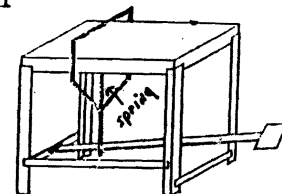


- TWISTING FORK: To make a twisting fork easily, straighten out about 16" of automobile spring and then fold over the last two inches on both ends in opposite directions. Cut two pieces of the spring the length from the shaft to the new point and then arc weld them to the shaft the distance from the outside line desired. You can quickly make these in sizes 1/4", 3/8", 1/2" etc. The thicker the metal to be bent, use larger diameter springs. Make sure you have a solid weld as the joint will take almost all of the pressure.



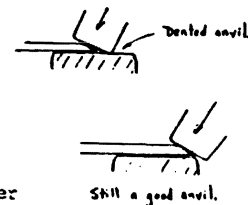
- SALESMANSHIP: Much of the afternoon was taken up with discussing business. Nol Putnam stressed the importance of not undervaluing one's skills or talents. "You have a specialized skill which took you a long time and a lot of work to learn". Nol's hourly rate is fairly high by the standard of most of our shops. He is very careful to explain to his customers very early on what they are in for. "I tell them all that I am very good and very expensive. I am very up front with them". He does large architectural commissions in a multistaged process. He starts by at least trying to get the potential customer/agent out to his shop. There he can show him or her the many sample pieces he has in his office, his portfolio of drawings, and some pictures. The samples immediately show the customer his work is very different from fabricated work, and much more expensive. If the customer really has a chop shop job in mind, Nol will find out at this point and cheerfully recommend a good welding shop. If not, he will discuss the requirements of the job, and forge a small ornament, such as a leaf, to give the customer some idea of what is involved in blacksmithing. This consultation is free and the customer goes home with the leaf to remind him of Nol's shop. Thereafter, Nol's time costs the regular shop rate. If the customer wants a design, Nol will produce a very professional looking drawing for a predetermined price. If the customer decides against the job, Nol receives his fee for the design, but keeps the design. He will not allow a customer to take his drawing to another shop and get a price on it. Nol will calculate a price for the design when he makes the drawing. He has a very complete listing of design elements and the time it takes to make them. Thus, it is a simple matter to add together the time for all the components of a design and arrive at an accurate time estimate. (From the newsletter of the New England Blacksmiths). (Nol recently won a competition to make a gate for the National Cathedral in Washington, DC. Elsewhere in the newsletter Nol stressed the importance of having a clean, well organized shop to leave the prospective customer with a good first impression. He also commented he likes to play classical music while he works with the philosophy that if you play shitty music you do shitty work and vice versa. - ed))

- HOLD-DOWN TABLE: This stand has a hold-down which is pedal operated so you can hammer, chisel, cut, punch, etc. without growing a third arm or inviting the wife over for fun and joy. Materials: 3/4" or thicker HR plate, however large you want for table top; 1"x1"x1/4" angle the height of your anvil for legs; 1"x1/4" HR cross-braces for legs, 4"x5"x1/4" HR plate for pedal; 1"x2" HR tubing length depends on size of table for pedal bar; 1/2" square HR bar (length depends on table) for hold-down clamp; 2" hinge (one needed); any size (e.g., 3/16" HR) for crosspin for hold-down; and whatever size spring works to pull the pedal up to release the clamp. (Table design by Tom Sheets as written up in the newsletter of the Tullie Smith House Blacksmith Guild).



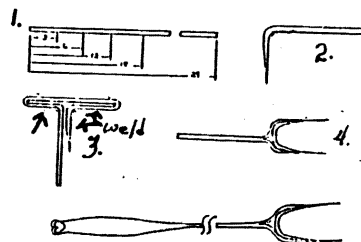
- RUST PITTED 100 YEAR OLD ANTIQUE??? It's almost disgusting, but occasionally I've been asked, for aesthetic reasons, to make my carefully wire-brushed forgings rusted and pitted to simulate a 100-year old rusty heirloom or piece of hardware. My first attempts were very time-consuming and produced less than satisfactory results. Now, however, after quizzing a chemist friend, I've been able to build up an authentic looking rusted and pitted surface in about two hours. Take your beautifully forged part, free of any oils or fingerprints, and, in a well ventilated area, preferable outdoors, dip it in hydrochloric acid (available from your local swimming pool supplier). This activates the surface. Allow it to air dry. Next, submerge it in a concentrated salt water solution (one cup of table salt dissolved in two cups of hot water) and allow it to air dry. The final solution is fairly nasty and requires some precautions in terms of ventilation. Mix one cup of granular chlorine (again, from your pool supply company) in two cups of tap water. Remember, the fumes are deadly! Dip the part and allow it to air dry again. Rinse your part off in water, blow it dry, and wire brush it to remove any loose rust. A good finish is Johnson's Paste Floor Wax. If, for some reason, there is an area which you don't want to rust (e.g., hinge bearing surface, cutting edge, etc.), a simple method is melted beeswax applied with a small paint brush to the area you want to protect. Happy Rusting! (By Robb Gunter from the newsletter of the Southwest Artist Blacksmiths Ass'n). (Soaking the item in a baking soda solution before final finishing is recommended to ensure all remaining acid is neutralized - ed.)

- SAVING YOUR ANVIL FACE: During the recent demonstrations at Pleasanton Fair I supplied a forge, anvil and a vise. I did it because I wanted good equipment available at this event and I thought everyone might like to use a Kolswa double-ended anvil. What I did not want was abuse of the equipment by those demonstrating. I want to inform/remind all members: when striking metal at an angle, such as in making a point, always move your material to the edge of the anvil so careless blows will not strike the face of the anvil. (By Jack Smith from the newsletter of the California Blacksmith Ass'n).



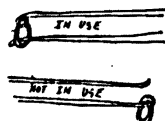
- **ARC WELDING SUNBURN PROTECTION:** Danny Downs has passed along a tip concerning the prevention of burns/blisters from the U/V and infrared radiation associated with arc welding. Danny has found the use of #15 sun-screen suntan cream will keep skin from burning when exposed to the radiation given off during the arc welding process. (From the newsletter of the Kentucky Blacksmith's Ass'n).

- **TOASTING FORK:** Materials required: 1 - 1/8" HR rod, 24" long and 1 - 3/8" HR rod, 7" long. Mark the 1/8" rod at 3, 6, 12 and 15 inches with chalk (Fig. 1). Scraf the first 2" to a wedge tip 1/8" wide, then bend at the 3" mark 90° with a 1/2" radius (Fig. 2 - note relation of bend and taper). Make TIGHT "U" bends at the 6" and 12" marks and another 90° - 1/2" radius bend at the 15" mark. Weld as indicated in Fig. 3. Now, draw out the welded "U" bends down to even tapers to for the tines - keep the tines round in cross-section. Reheat the tines and bend evenly spaced on either side of the shaft (Fig. 4).



Draw out one end of the 3/8" stock down to 1/8" wide and to a fine point. Draw down the shaft end of the fork and forge weld to the tapered 3/8" handle. Draw out the 3/8" stock to 1/8" x 3/4" wide for the handle and finish the end as you want. This example uses a heart-motif used on display at Tullie-Smith House. Finish final shaping, etc. to suit your eye and you're in business. (By Clay Smith from the newsletter of the Tullie-Smith House Blacksmith Guild).

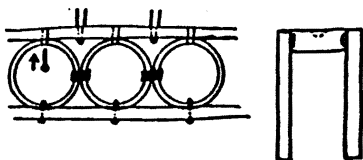
- **TONG LINKS:** Everywhere I've been, everyone always uses rings on tongs for holding. The trouble with this is you are always hunting the right size ring. Try this instead: in one position, you squeeze handles together and hook. Do same to release. If you don't want them to hook, simply turn tongs over. They won't hook. (By Jerry Grice from the newsletter of the Florida Artist-Blacksmith Ass'n).



- **HAMMERING:** When hammering a lot and your forearm starts to ache, try going to a smaller weight hammer with a longer handle. Less strain. You'll have good control after getting use to it! (By Gerry Grice from the newsletter of the Florida Artist-Blacksmith Ass'n).

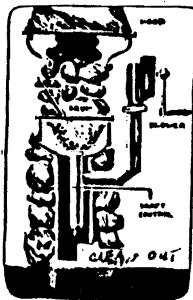
- **FINISHING HAMMERS:** Never use your finishing hammer against any other hand-held tool (e.g., punches, veining, etc.) because you will damage the face of the hammer. Always have a rough hammer for such work. (By Gerry Grice from the newsletter of the Florida Artist-Blacksmith Ass'n).

- **RIVET HEADING TOOL:** On the gate and side wings portion of the gate for the Studebaker Frontier Homestead, one of the final assembly processes was riveting the rings at the top to the middle cross bar. The problem was on how to get a rivet heading tool inside the rings with enough support to be a proper backstop while riveting a head on top of the bar. For the wings, Hans Peot made up a heading tool as shown to the right.



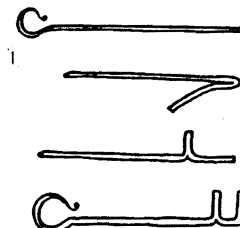
To use it we placed the gate upright held on one side by a postvise. Then all we had to do was lift the other side of the gate, slip the heading tool into the ring to be top riveted, and do the riveting. To tool was two lengths of 3/4" square welded to a short length of 1 1/4" or so solid rod drilled in the middle of the top the size of the 1/4" rivet heads used. This was a great improvement over the way we riveted the gate sections. The tool legs sat on the floor giving solid support.

- **IMPROVISED FORGE:** Bob Wilson sent in a sketch of this forge out of Country Comforts by Christian Bruyere & Robert Inwood (a nice book on improvised living). Since I had the book, I make a copy of it. The bowl is a truck brake drum welded on a length of 8" pipe. The blower outlet pipe is 3" from an old drive shaft. The draft control is a metal disk welded to rod to block air during operating and to let slag out. I would recommend it be at the bottom of the bowl unless some type of air hole plate is put at the bottom of the bowl to keep large chunks of coal/coke from falling into the inner pipe.



- **DRILLING WITH WATER:** Drake's Modern Blacksmithing (by J.G. Holmstrom, Drake Publications, 1971) suggests using water instead of oil for drilling steel. He said even turpentine or kerosene is better than oil. I think water is too cheap, use turpentine or kerosene. (By Bob Wilson)

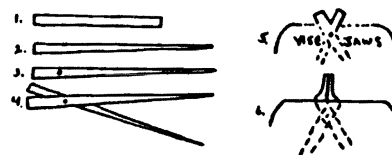
- **BENDING WRENCH:** Start by cutting a 24" length of 1/2" round stock. Straightened springs are best. You can vary the diameter to suit your needs. Forge a finial at one end of your own design and mark a point 6" from the other end. Heat and fold the marked end back on itself, prepare it for a weld and then weld it 1 1/2" back. Draw the welded area out to 1/2" diameter. Next bend the welded area as shown with the previously bent over part coming back into alignment with the handle. Don't forget to forge out the welded area first. Now bend tail to form the fork. A 3/4" opening seems to cover most applications. It can be varied to suit needs. You can make several sizes of these. If you use spring steel, harden fork and temper back to peacock color. (By Joe Farina from the newsletter of the Florida Artist-Blacksmith Ass'n).



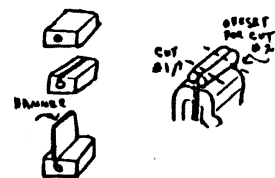
- **MAKING A ROSEBUD IN IRON:** 1. From a 3/8" square bar, upset a cube on one end approximately 5/8" on a side. Bar should be about 8" or longer. 2. Taper cube to a point leaving two opposite sides wide at point. This will make splitting the center easier. Hammer or file corners off bottom of cube. 3. Split taper along wider face to within 1/16" or so of bar. Fuller bar around right below the split to about 5/16" or so. 4. Spread split ends out until about perpendicular to bar. Fuller each half until very thin, especially the edges. Edges can be further worked with peen and rounded edge of anvil to make them slightly ragged. Completed pedals will be about 1 1/4" side and 1 3/8" long. 5. After fullering, curve each half on a ball swage with ball peen. A hardy hole will work in lieu of ball swage if done carefully. Be careful not to burn the edges of the pedals from now on. 6. By now, the petals should resemble two spoons with bowl facing each other. Turn the edge of one side inward; and the other outward. Do the opposite to the other petal. Close the two petals to produce shape in diagram. Draw out rest of stem taking time to make it slim and graceful to about 12" or more. Cut end hot on a slant. Weld three leaves together. (See The Anvil's Ring, March, 1979). Now jump weld to stem. Note: Serrate edges of leaves in vise with sharp chisel before welding together. (By Barry Wheeler from a 1980 issue of the newsletter of the Ohio Blacksmith Ass'n).



- **MAKING LIGHTWEIGHT TONGS:** To make a pair of lightweight tongs, start with two pieces of 5/16" x 5/8" x 12". Make off 15" and draw out two tong reins. Keep to even thickness. Drill 3/16" hole in each piece, make them match. Use 3/16" rivet, hit first blow straight down on end to be peened over. Round off rivet end. Rivet should be 1 1/2 times diameter stick out through the holes. Heat ends to red. Clamp in vise jaws with handles slightly open. With crescent wrench, twist 90° clockwise for right hand tongs or counterclockwise for left hand tongs. With hammer in each hand, true up the two jaws still in vise. These lightweight tongs are great for sheet work, light pieces, etc. (By Joe Staley from the newsletter of the Upper Mid-West Blacksmiths Ass'n).



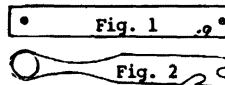
- **MAKING BUTTERFLY (BUTT) HINGES:** Using 14 gauge hot rolled, figure the size roll needed by using pin size and adding two thicknesses of metal. Drill this size hole lengthwise in a 1" x 2" block 4" long, mild steel. Ream it out a little (1/32") for clearance. Put two blades in a hacksaw, and cut to edge of the hole. This may take a while. Cut 14 gauge stock to 4" wide and start curl over edge of anvil, tapering the edge a little. Insert the piece into the oiled jig and hammer on top. Presto, you have a rolled eye for a hinge. Make a pair of them, put the back to back in a vise. Make a cut 1" from the end through the eye of both pieces. Release the vise, offset a little and cut the other end 1" in. With a sharp chisel, cut out the male end on one and the female end on the other, letting them be a little big, then file to fit. These hinges will not appear to be handmade so decorate them with chisel or make leaf forms or whatever. Even the pin head can be decorated and punch holes for the screws. It is easier to punch thin stock than to drill it. (From a demonstration by Bob Bergman from the newsletter of the Upper Midwest Blacksmiths Ass'n).



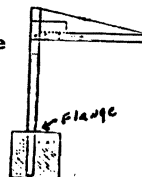
- **SCROLL TONGS:** After seeing Dan Boone's scrolls tongs or pliers at the October workshop, Mike Kudzinski went home and made his own version. With one hand grasping the middle section and the other at the end of the handles, these offer two handed control and improve torque - great for fine tuning scrolls made out of larger stock or for tightening the inside radius of a curve. Mike says they have a wide variety of applications. They can function like an adjustable bending fork. Overall length is 20". Area between center of rivet and jaw tips is 4". Areas between middle rib and handle ends are 2" and 4", respectively. Use good steel at least 1/2" thick, make the hinge are heavy and provide a large bearing surface since you'll want them to stand up well under heavy use. (From the newsletter of the Pittsburg Area Artist-Blacksmith Ass'n).



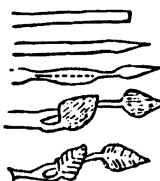
- **OVEN RACK UTENSIL:** This item makes a nice gift and is something every woman will use. It is used to push or pull hot oven racks. Start with 1/8" x 1" x 12" and punch or drill three 3/8" holes (Fig. #1). Reheat and forge to shape both slots. A slight amount of filing may be necessary to clean up the slots. Heat opposite end and draw handle down until it has a nice radius on both sides (Fig. #2). Reheat and draft out hole in handle to about 3/8" and dress to match handle radius. Use file or belt sander to break sharp edges. Heat finished piece and blacken with a cooking oil as this will be used around food. (By Ron Porter from the newsletter of the Indiana Blacksmithing Ass'n).



- **JIB CRANE:** This jib crane was made by Kurt Fehrenbach to handle equipment in his new shop. Material required: 1 pipe 6" x 12', 1 pipe 5" x 12', 1 I-beam 6" x 10', 2 steel plates 1/2" x 1' x 2', 4 3/4" x 10" bolts w/nuts, 1 steel flange to fit around 5" pipe, one turnbuckle and 10' of heavy cable. Set smaller pipe in concrete. Assemble swing arm and place it over 5" pipe on a flange to keep it from damaging concrete. (From the newsletter of the Indiana Blacksmithing Ass'n).

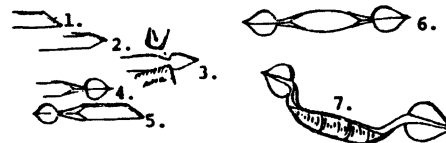


- **POINTING AND TEMPERING AIR HAMMER BITS:** Repointing air hammer bits can be a side-line which helps to pay the shop rent or expenses. However, for repeat business, the bits need to stand up to use like a new one. Rapid dulling or breaking can be avoided by properly pointing and tempering the bits. In the January 1989 newsletter of the Upper Mid-West Blacksmiths Ass'n, Mike Dosemagen provided these points: Start with a deep, clean, new fire for more control on the length of heat on the point. A perfect heat would be no more than you are going to draw out, but that is not possible - heat as little of the point as possible and still work on it. Be sure you do not make a point hollow on the end. It is better to cut off a small piece and finish by hand. If the point is mushroomed over at the end, grind it smooth - you don't forge the mushroom out, you forge it in otherwise. Use room temperature water for a quench - about 75°F is good. After forging, drop air hammer bit point first - straight up and down, into water and move it around until cool. Don't pull it out and look at it until it is cool or it will crack. After initial forging and hardening, grind a break of approximately 5/32" to 3/16" on the end of the point. He uses bullet lead for a draw as it melts at about 480°F by using a container about 5-6" deep to hold 2 or 3 points at once. Place in molten lead DRY - absolutely no moisture - for about 5 minutes. Pull out of lead and put back into water until cool. (I would also suggest polishing on a wire wheel for a nice shine and then applying a thin coat of wax (or similar finish) just so they look real nice when you return them for payment. In your pricing, also include a factor for pick-up and delivery service if appropriate. This seems a nice application for a gas furnace/forge as you could work several at once without having to watch or play with the fire. - ed.)

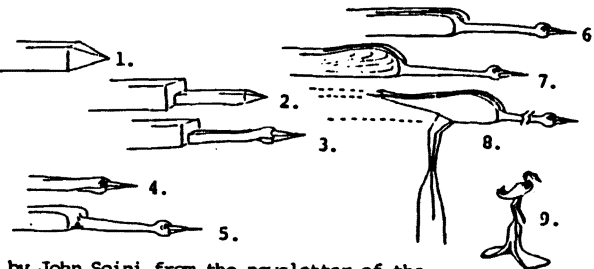


- **TWO LEAVES FROM ONE BAR:** Use a piece of copper about 1/4" by 1 1/4". Start with a very sharp taper, then offset the first leaf. Next offset the second leaf and chisel a cut for the double stem. Form the leaves and spread the stems apart. Use chisel to delineate bottom of the second leaf and chisel away the tip of the second leaf. Use the pein to spread the leaves, flatten and vein. Cut off bar and press up the stems with straight pein. This was two, but you could do a bunch in a row if you wanted to. (By Jack Brubaker from a demonstration reported in the newsletter of the Upper Mid-West Blacksmiths Ass'n).

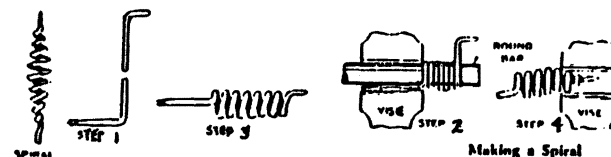
- **CABINET HANDLE:** Stock 1/4"x3/4". 1. Cut end of bar to 45° angle. 2. Center the point and draw to point. 3. Shoulder to define cusp blank and begin shank shape. 4. Forge cusp and hot punch mount hole. 5. Cut to length at 45° angle and repeat first four steps. 6. Forge handle. 7. Bend to shape, align and wax. You can drill mount hole if desired. (From a demo. by Jon Soini from the newsletter of the California Blacksmith Ass'n).



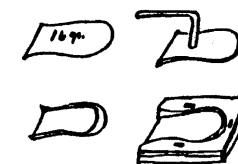
- **MARSH BIRD:** (Stock size not given). 1. Obtuse point. 2. Shoulder/tenon to square cross-section. 3. Twist neck 1/8 turn, forge beak and face. 4. Punch eyes. 5. Forge final neck shape. 6. Split back for wing detail. 7. Crosspeen wing sides. 8. Split for tail/leg separation, split legs, bend final pose and cut from bar. 9. Forge base. (From a demo. by John Soini from the newsletter of the California Blacksmith Ass'n).



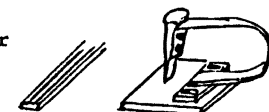
- **MAKING A SPIRAL:** On the final step, you apparently start near the middle and work your way out a little at a time to avoid flattening the twist. (From the newsletter of the Florida Artist-Blacksmith Ass'n).



- **SHOVEL MOLD:** I have used this jig for years for making shovel blades. Cut the final size of you shovel head out of a 3/8" plate. When shape is cut out, cut sides of outside plate at an angle. Put a handle on the cut out piece to serve as the top plate. Weld outside piece to another piece of 3/8" plate. Cut pattern 1" larger than cutout. Heat to a dull red and drive top plate down and you have a nice shovel. No welding or rivets. (By Jerry Grice from the newsletter of the Florida Artist-Blacksmith Ass'n).

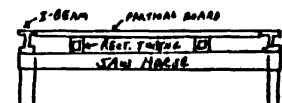


- **GROOVE CUTTER:** This is a tool I've been thinking about making to cut grooves in metal. It's rough, but can be improved upon. It can be welded together or bolted together and have some adjustment as to where you want to groove the metal. A boat trailer spring would work good for the spring section and I would bolt the chisel piece on where it could be resharpened. (By Jerry Grice from the newsletter of the Florida Artist-Blacksmith Ass'n).



- **PORTABLE/STORABLE COMBINATION WELDING AND LAYOUT TABLE:**

While visiting Manfred Bredohl's shop in Aachen, West Germany, I noted his welding/layout table consists of two sawhorses supping two wide flange "I" beams. Between the beams, and flush with the top flange, is a sheet of particle board supported on two pieces of rectangular tabing. The entire table is completely portable and storable. The particle board is used as the layout surface. When one side gets full of layout lines, you simply flip it over. When the second side gets full, you either sand it down or throw it away and get another sheet. The pieces which were being welded on the table were always laid on the table such that some part rests on top of one "I" beam to provide the ground connection for the arc-welded. This table offers great advantages over the more conventional welding/layout tables which are typically a couple of tons of steel and, once set up, are impossible to take down and move. (By Karl Schuler from the newsletter of the Southwest Artist Blacksmith's Ass'n).



- TIPS FROM PROGRESSIVE FARMER MAGAZINE (\$14 per year, Box 2581, Birmingham, AL 35202)

— To keep work gloves handy, tack a spring-loaded clothespin to the edge of the workbench.

— Use a spring-loaded clothespin in your vise to hold small diameter tubing. The clothespin grips the tube without crushing and protects the finish.

— Sometimes the only way to make a hard-to-reach weld is with a bent welding rod. Unfortunately, you're likely to chip off the coating of flux when you bend the rod. To avoid this, strike an arc with the coated rod for a second or two on a piece of scrap iron. That will warm the rod enough so you can bend it without chipping off the flux.

— To make a gauge for verifying 90° angles, put pieces of flat stock diagonally across one corner of a workbench, place angle iron pieces over them lining up with the table edges and weld to the flat stock. Similar jigs can be made for other standard angles.

— A long screwdriver, awl, 1/4" dowel, or heavy piece of straight wire can be used to guide heavy liquid from a large container into the small opening of another container. Glue, oil or other thick liquids will cling to the rod and flow off the end in a thin stream. Do not put the end of the guide into the lower container as the liquid will catch on the edge of the opening and run over the side.

— If you don't have the correct size tap handy, here's how to cure troublesome bolt threads which refuse to catch. Saw slits in the threaded end of a bolt in the shape of an "X" about 2/3rds down the threads. Touch up the rough spots on the bolt threads with a small triangular file, then close up the gaps with a soft hammer to reduce the diameter of the bolt.

— To keep your steel measuring tape clean and working smoothly, lubricate it with waxed paper. It does a good job without getting the tape messy.

— Large safety pins are handy for storing small articles such as washers, fishhooks, and extra nuts. Just string the items on a pin, snap it shut, and hang it on a nail or string it on a wire.

— Anvil bases which are flat on the bottom wobble if not on a flat, level surface. Weld up a stand using three lengths of pipe, cross-supported, with an anvil tray on the top. It will have solid footing even on a surface which is uneven, and will be a lot easier to tote around than a stump or other solid stand.

— A heavy-duty, bright-colored plastic shopping bag makes a fine spread on which to lay wrenches when you're making adjustments or minor repairs outside your shop. It helps keep tools from getting dusty or from getting lost in tall grass and is strong enough you can carry quite a few tools in it back to the shop.

— Tie-rods from junked cars make good gate hinges. They are strong and, with grease fittings, allow easy operation. They will last indefinitely.

— Small quantities of paint, lacquer, or other finishes can be used in a spray gun without a lot of waste. A 1/4" hole drilled in the lid of a plastic film canister will fit the siphon tube of many spray guns. A 1/16" hole in the cap lets air in to replace the liquid as it is used.

— The household cleaner "Fantastik" does a good job of removing the buildup of gum or pitch from powersaw blades. Clean blades cut faster, are safer to use and extend the life of the saw.

— To drill a hole through a bolt, screw a nut onto the bolt and drill through both at the same time. The nut acts as a drill jig and is not spoiled. Nuts can also be used to drill a hole through a solid shaft. Just drill out the threads to the side of the shaft.

— By removing the reel and flipping over the lower blade, an old reel-type lawnmower can be converted into a handy two-wheeled truck for moving acetylene tanks, garbage cans and many other hard-to-carry items.

— To test the effectiveness of your radiator antifreeze solution, put some in a small, clear bottle and put it in the freezer. If the liquid freezes, you need to add more antifreeze or change the mixture altogether.

— The carrier illustrated neatly separates welding rods, chipping hammer, and wire brushes and keeps them handy both for field and shop use. The carrier is made by welding short lengths of 1 1/2" and 2" pipe to a piece of channel iron. The handle is made from 3/4" pipe and 1/2" rod.



— To keep hands free while soldering, take a short piece of old garden hose and cut it to a length of about 6". Place it in a vise and cut two slits for holding the wires or other pieces to be soldered.

— To cut the top out of a steel drum, use an old lawnmower blade and drive it with a hammer. It leaves a very smooth top with no sharp or rough edges.

— Illustrated is an adjustable clamp for holding small items to be welded. The shaft on which the large C-clamp is fastened can be slid from side to side by loosening the setscrew at the top of the vertical shaft. Up and down adjustments can be made by loosening the setscrew at the top of the tripod stand. This vertical shaft fits inside a piece of 1" pipe which is supported on three legs made of 1/2" rod. The piece of flat stock opposite the C-clamp is for the ground connection.



— Lengths of 2" pipe welded to angle iron legs makes a light, but strong sawhorse. Crosspieces about 6" about the floor should be added to keep the legs from spreading.

— A versatile addition to your leg stand is to make up an insert containing a handle at the top, a four outlet electrical box and an arm to the side to hang the extension cord with one end connected to the electrical box. It is very portable and allows you to plug in more than one tool at your worksite.

— A sanding disk on an electric drill makes a good emergency knife sharpener.

— Touchup paint jobs are less of a nuisance if you use disposable pie pans for holding the paint. When the job is finished just fold the pan to make a spout for pouring leftover paint back into the can. Then discard the pan.

— For an easy-to-use gate latch, weld a horseshoe or short length of 1/2" steel rod bent to a "U" shape to an old hinge. It will work like the latch on a chain-link fence gate.

— A detergent bottle cut to shape with a pair of scissors makes an excellent holder on the end of a sawhorse or edge of a worktable. It can be used to hold your chalk box, pencil, electric drill, or hammer.

— For an inexpensive air gun or blower, remove the core from a regular tire valve stem and screw it into the tire filler end of an airhose. It works easiest with a locking or clip-on air chuck.

— Discarded elevator lift cups make handy racks for storing nails, bolts, washers, pipe connectors, and other small parts. Attach them the desired number high on a hexagon-shaped, swiveling support, or they can be attached to a pegboard wall panel.

— Keep welding rods fresh by storing them in an airtight container with a 40 watt bulb on constantly. Add a piece of masking tape to one rod in the bundle indicating the rod type, its use, and AC/DC requirements.

— A large, heavy duty baking pan bolted to a steel rod which is inserted into a pipe stand makes a handy tool or parts organizer for the shop. If mounted on casters, it can be rolled right up to the work area. It's especially handy for keeping track of bolts or other small parts which are removed.

— To drill holes in round stock in a drillpress, weld two lengths of angle iron side by side to resemble an "M". The stock to be drilled is placed in the middle "V".

~~— If you use a lot of motor oil or transmission fluid, use the emptied~~
bottles in the neck of a milk jug. A funnel must be used with cans. That way, no fluid is wasted.

— To make a good holder for taking welding rods right to the job, plug the bottom of a short piece of 2" pipe. By attaching the pipe to a heavy-duty magnet, you can stick it near your work when welding in a hard-to-reach place such as one high off the ground.

- **QUICKY BOLT OR NAIL HEADER:** If you have trouble getting a completed bolt or nail out of the header, here's a simple alternative. Use two pieces of angle iron. Separate them with a business card and drill a hole to fit the rod being used. The pieces are mounted on light mild steel. (By Francis Whitaker from a demonstration).

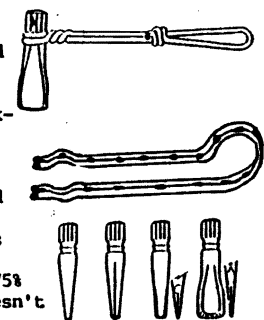
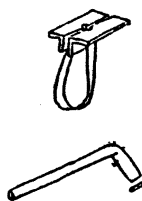
- **TWEAKING IRON:** A tweaking iron is used to adjust basket bars. It is made as illustrated. The handle is round or square and the pry end is flattened like a screwdriver. Insert the flat between the bars and twist. (Original source unknown)

- **BACK SCRATCHER:** Material: 3/8" square 20" long. Draw out the first 2" down to a taper 3/32" at the end and then draw out the tapered portion (see illustration). Twist the next 2" to an oblong shape approximately 2"x1"x1/8". The next inch leave as original, you can use this length for decorative stamping. Repeat oblong shape for next 2" of stock. Pineapple twist the following 3". Repeat oblong shape for next 2". The next 3" get a tight twist in either direction. You are not left with the last 2" of your original stock and this is where it can get a little touchy - WATCH YOUR HEAT!! Fuller down the 2" section to a rectangle approximately 2" wide by 3/32" thick. Split about 2 1/2" of the 3" length into three equal fingers. Reheat CAREFULLY and twist each finger 1 to 2 turns around the long axis. Reheat and bend the fingers at 90° to the rest of the stock. File the ends of the fingers even and smooth. Apply your favorite finish and BINGO YOU'VE GOT IT!!! (By Mike Shaffer from the newsletter of the Tullie Smith House Blacksmiths' Guild).

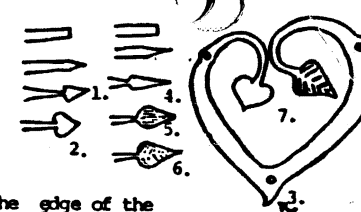
- **WIRED HANDLED HOT PUNCHES, CHISELS, ETC.:** A few years ago Russ Swider introduced me to a fantastic tool steel for hot punches, chisels, punch/drift combinations, etc. It is called ATHA-PNEU S-1, manufactured by Crucible Tool Steel Co. Originally designed as a drop forged steel, it has some unusual characteristics which prove to be quite valuable for the blacksmith. It is extremely tough and durable material for hot hammered applications (AISI classification "S-1" is a shock resistant tool steel). It is .55 carbon, .0275 tungsten and .0125 chromium. Even though, by design, it is an oil quenched steel, it seems to work quite well as an air hardening tool steel - forge it and use it. However, 3/4" round delivered is usually about \$1.00 per inch! For handles I use 1/4" rod typical of some of the English flatters and punches. With 2.75% tungsten, you forge it HOT!!! If it's not yellow it "just doesn't move". The manufacturer recommended forging range is 1975°F - 2075°F. DO NOT try to forge below 1650°F. To limit the amount of steel required, I use a 3" section and forge about 1" of the end to an even octagon and then fuller two concentric 1/8" radius grooves into the stock about 3/4" from the end for the handle attachment. My fullering tool is two pieces of 1/4" rod skip-welded every 2" on the outside. The remaining 1 3/4" of stock is plenty to draw out to whatever type of hot tool required (e.g., chisels, hot slit and drift combinations, square, round, rectangular, oval, heart or hex punches, hot grooving or slitting chisels, hammer eye punch/drift tools, etc.). After forging, allow the tool to air cool. No tempering required. You'll notice that ATHA-PNEU scales more than some others. Grind it off. You do not need to cool these tools while in use as the contact temperature won't damage the working end. (By Robb Gunter from the newsletter of the Southwest Artist-Blacksmiths' Ass'n). (I saw Russ using S-1 at the 1986 national conference. He usually had two of each tool. When one was getting too hot, he put it to the side and used the second. He never seemed to quench a tool to keep the temper - ed.)

- **LEG VISE HANDLE HOLDERS:** To keep the handle in an upright position when two hands are required to put something in the vise, cut out washers from an old inner tube. The center diameter should be just smaller than the handle shaft. The outer diameter should be about the same as the balls on the end. Slip rubber washers over balls. When you need the handle held in a certain position, just slide washer to opening in center nub. These also reduce the noise of the handle sliding down and help prevent painful pinches between the thumb and index finger. (By Randy McDaniel from the newsletter of the Mid-Atlantic Smiths Ass'n).

- **KNIFE FROM ANGLE IRON:** For a knife with a soft exterior and a carbon steel interior, use 3/4" angle iron 1/8" thick by 3 1/2" long. Cutting edge to be inserted in the middle is 1095 steel 3" long. Close up angle, lay in 1095 and flux. Bring to welding heat and weld completely. Cut off end with hardy. Work down cutting edge keeping stock straight. Form tang on edge of anvil. Work down cutting edge to even grain. Finish as a regular knife. (By John Teslow from the newsletter of the Upper Mid-West Blacksmiths Ass'n).



- **HEART TRIVET WITH LEAVES:** Make from 1/4" x 3/4" mild steel or anything you want. Start with a sharp triangle offset at one end (1). Drive corners back and flatten, forming heart finial (2). Draw a continuous taper to the center of the bar. Upset a sharp corner (over 90°) with sharp pointed tail at center (3). Start the other leaf with a very sharp point before drawing down the neck (4). Pein the leaf wide, flatten and shape (5). Turn at an angle and pein the veins in the leaf, using the edge of the anvil to get a little uneven edge (6). Taper to the center and bend to final shape (7). Using a slot punch, start holes for legs, then drift to round size desired. Make tenons on leg stock and rivet them in place. The top of the tenon should be chamfered at the top to make them look right when riveted over. Touch up and finish by your favorite method. (By Jack Brubaker from a demonstration as reported in the newsletter of the Upper Mid-West Blacksmiths Ass'n).

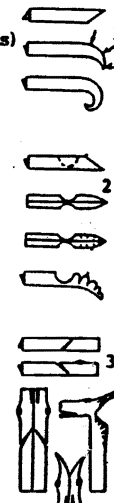


- **USING ANGLE IRON** (From a demonstration by Fred Crist, Yellin Museum, as reported in the newsletter of the Blacksmith Guild of the Potomac): (1/4" x 2" angle iron was used in these architectural designs)

1. To scroll, cut off one end with a 30° cut. After heating, draw out the end and gradually drive it over until the scroll is formed. Fred used special "V-ed" mouth tongs to hold the angle iron while forging. The tong jaws were made from angle iron also. Keep the scroll straight as you roll it over.

2. To make a leaf, cut off one end at an 30-45° angle. After heating, round the corners. Next chisel mark half circles about 2 1/2" from the end and hot cut them out using a curved hot chisel. An aluminum plate was placed on top of the anvil to cut on. The curved hot chisel was not secured on the handle so Fred could reverse the head on the handle. This makes it easier to complete the cut when working alone. The two half circles form the stem once the metal is removed. The leaf section is then cut in four spots on each side of the leaf. These cuts are made all the way through, cutting from one side only. The last step is to fuller between each cut. This causes the leaf to curl and also simulates veining.

3. To make a animal head from angle iron, Fred starts with a one foot section of angle iron. Use a hot cut chisel to make cuts at an angle on both sides about 4" from the end. Punch eyes with a slit chisel near to the edges and open them up with a small drift. Be accurate as the eyes must line up when the head is formed. Use a pair of vise grips to hold small chisels, punches, and drifts as necessary. Clamp the angle iron upright in the vise and chisel cuts for the mouth. Punch in the nostrils. Open up the mouth. Bend over the angle at the original cuts to a right angle. Now shape the ears. To finish, crosspeen in the neck/back area. Head should stand upright on its own.



EMPHASIZE QUALITY WHEN SELLING YOUR IRONWORK: (By Lloyd K. Hughes, Kentucky Ornamental Iron, Lexington, KY as reprinted in the newsletter of the California Blacksmith Ass'n)

Most clients who walk into your business will say they are interested in nice wrought iron rails or gates. They generally base their decision on rough drawings and quotations from two different fabricators. Seldom do they compare the quality of one fabricator's work to that of another. It is up to you to convince them to pay more to get the quality ironwork you produce.

There is a real need to stress the quality of your work. If your specialty is railing then make some rails in various styles and display them in your shop. Do the same with gates or doors or whatever type of work you do. Creating a nice display tells your customer you take pride in your work.

You may want to consider putting together an album with quality photographs of jobs you have completed. The customer may find just what they're looking for in some of your previous work. The album will be particularly helpful when you meet a customer at a job site and you can't take samples with you.

One idea to use on larger jobs is to provide samples of the proposed ironwork. Consider it a challenge to your competitors to offer the customer the same quality work as you produce. Making a sample section of the work should also aid you in formulating an accurate bid.

When working with a customer on a design, consider his budget for the intended work. A simple design which is well executed is far better than trying to cut costs on a more ornate design. You'll be doing a disservice to your customer and yourself if you compromise quality for embellishment.

Even if you don't have a fancy showroom and photo albums stocked with glossy pictures, you can show off your work by letting the customer see work in progress in your shop. Point out little details like welds ground smooth and even picket spacings on your rails. Show them how you prime and paint your work to prevent rust. These are little things they probably never thought of before but will realize their importance because you place so much emphasis on them.

No matter what methods you use, you'll not convince every customer to pay a little more to buy your work. You will, though, get more of the jobs you really want to do. You will also gain a reputation as someone who produces quality ironwork and that alone will sell many, many jobs for you.

(Several other tips from Nol Putnam in this area are to keep a clean and tidy shop and to make a small item for the potential customer when they visit the shop. Nol usually makes a small leaf from round stock. This let the customer see him using the forge and gives them a souvenir of the visit. - ed).

NOTE: To pack as much into this issue as possible, I reduced illustrations even more than normal. If you cannot read illustration notes, call and I'll send you a copy of the original write-up.

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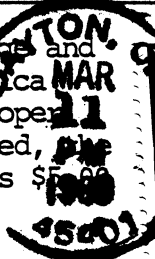
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