In Memoriam

Jim Ryan was an important presence in our organization as well as our craft. This is reflected by his contributions of beginners material to our publications and by his instrumental role in the establishment of The Hammers' Blow.

As the first editor of The Hammers' Blow, Jim established the format and direction of this journal. He had recognized the existing need for basic and intermediate 'how-to' information in the growing membership of ABANA. The Hammers' Blow was launched as an effort to fill that need.

This is part of his legacy. As you read through and use the information, pause and think of Jim Ryan.

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Door Handles and Thumb Latch

Courtesy Samuel Yellin Metalworkers

Winter 1996
ABANA / Internet Update

The ABANA Internet Address is:
http://wuarchive.wustl.edu/edu/arts/blacksmithing/ABANA/

The Forge, ABANA's Internet based E-Mail round-table discussion group has taken off well. The topics have covered everything from coal quality through pattern welding and finishes. Some of the finish tips can be reviewed in the Shop Notes section of this issue. If you have E-Mail access and want to join The Forge send an E-Mail to the editor at any of the electronic addresses below and I will set you up right away.

The Board of Directors of ABANA has approved a program to help establish Chapter Internet Sites or "Home Pages". The Internet Committee has put together a set of disks, one each for Mac or IBM based machines, that will help your Chapter get online. This site package has fill-in-the-blank linked pages that include a newsletter page, how-to-join page, description of the Chapter, an events page and an ABANA-Net page. The ABANA-Net page has all you need to join the growing, inter-linked community of Chapter sites as well as a link to the ABANA Internet site. By next spring it will be possible to log onto any existing Chapter site or the ABANA site and point-and-click your way across the country (as well as the world), exploring the offerings and event schedules of our organization as easily as you read this. If your Chapter is interested in getting online contact the ABANA SysOp (System Operator) at any of the editor's addresses listed below. Connecticut, Minnesota and North Carolina Chapters are already online!

Curious about the Internet but unsure of it as well? The Internet Committee of the ABANA Board is sponsoring two presentations about this topic at the ABANA Conference at Alfred, NY next June. The topics will include a Basic/Beginners Session. This session is geared towards those folks who do not have an internet account and would like to know the basics of getting on the internet. Skills required: basic knowledge of using a Macintosh or Windows based computer. This session will focus on the uses of the internet, E-Mail, Newsgroups, hardware/software requirements, as well as the costs involved to get on the internet. There will also be an Intermediate Session. This session is for those folks who already have internet access or are interested in creating a Web site. Requirements: must be familiar with the items covered in the Basic Session. It will include the basics of creating/maintaining a web site, HTML - Learning to "program", graphics and much more.

Attention Chapter Newsletter Editors

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There are many chapter members who are not ABANA members and occasional use of material from this publication will not only share information but it may help them to see the advantages of an ABANA membership.

Correction:
The correct phone number for last issues Peddinhaus Tool notice should have been Kayne and Son Custom Hardware (704) 665-1988

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Blacksmith's Bookshelf

Wrought Iron Designs
H. Grave
Published by Norm Larson Books

*Wrought Iron Designs* is a reprint of an 1873 French work. The book consists of line drawings of decorative metalwork that the author had "collected...during ten years of travel throughout Europe". It contains over 140 pages of illustrations and very little text.

Starting with pages of varied details this book covers grilles, railings, doors, crosses, hinges, and sign brackets. It also includes a wide selection of what is truly miscellaneous ironwork. This work touches on leaves and vines as well as several different ornamental alphabet examples.

If your direction is towards traditional styles and motifs then this is a great design reference. There are many examples that could be interpreted as piercings or repousse. The vocabulary of shapes and patterns listed as "Ornaments En Fer" alone makes this a book worth considering. An avid Blacksmith can either use these ideas as inspirations for bar endings and incisings or treat the entire work as a sampler of European period style. *Wrought Iron Designs* is a book that should land on just about every Blacksmiths Bookshelf.

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Shop Notes

Finishes:

There are many kinds of finishes. Interior metalwork allows the widest range of finishes to be applied. Traditional finishes of bees-wax or oils can be blackened with heat or left clear to allow the metal to show through. Modern clear coats such as Val-oil or varnish which are usually brushed on or polyurethanes, which can be sprayed on, also allow the underlying metal to be seen.

For interior work I prefer the following finish:

Either hand sand or wire brush to clean the metal surface. Mix 60 - 40 linseed oil (boiled) to turpentine. Brush the mixture on and remove the drips that slowly form. When this has dried, apply a good coat of organic, rather than synthetic, varnish. This is more due to the plant base of the first mixture than anything else. When this has dried, apply several coats of a good carnauba base paste wax. Apply it with a soft brush to get into uneven or layered surfaces. When the wax dries to a matte finish, buff the piece with a soft shoe brush to raise the luster of the wax. The use of brushes instead of cloth to both apply and buff the finish reduces lint and the bristles can get into places a rag won't.

This finish approach was used by the Samuel Yellin shop early in this century and examples of work coated in this manner are still rust free. Again, this is an interior finish.

Tell the customer to wax their iron as often as they wax their fine wood furniture, let them know which wax you used and how to do it. A card made up with "The Care Of Your Ironwork" that explains the waxing is a nice thing to add with the bill!
Shop Notes

Finishes:
The following finish ideas came through 'TheForge', ABANA's E-Mail Round Table. Realize that oil on hot metal will often flash into a fire. Dispose of oily rags safely and work in a well ventilated area.

I have used on numerous occasions for large pieces the following: one part by volume of fine lubrication grade graphite powder mixed with three parts of Formby's hand rubbed low gloss poly finish. The result does not look like a urethane finish, but the highlighting effect of the graphite when well rubbed is outstanding, and the poly is an excellent binder and preservative.

Bill Durrett

For a semigloss black finish for inside work, I have used graphite powder. Rub it on and then polish with another rag. To keep from rubbing black off for years, spray on several coats of Krylon. To keep from getting black all over your hands, use a rubber glove with a cloth glove over it.

Clay Spencer

We use a medium sieve graphite mixed with Trewax to highlight painted finishes with sufficient texture. A simpler alternative with a more uniform, matt, but less interesting effect is to use Cast Iron spray paint from the autoparts store over a painted surface. (try these over Spatz walnut brown).

Nick Brumder

I use a burnt oil finish to protect my indoor iron. I will heat up the piece until the oil burns on the iron. I will keep this burning for a minute or two. The next step is to put a coat of shoe polish over the black finish. The result is a consistant finish that looks good and is easy to maintain, put a little shoe polish on it.

Dave Koenig

Used motor oil is only good for recycling. Stay away from the multi weight varieties as they have all sorts of additives.

Bill Hochella

Materials:
Linseed oil (or another organic oil that will blacken when heated to high temperatures. Motor oil is specifically designed not to burn, so don't use that. Cotton rags (burn them after use, they can self-ignite if you leave them lying around with oil in them). Good heat source, that will allow you to heat (at least part of) your object to be blackened to red heat.

Procedure:
Heat the object until it's red hot, and a thin oxide layer starts to form. Galvanized or stainless steel will not work. If there is too much fire scale on the object, brush it away with a wire brush. Take a rag with plenty of oil on it, and rub it on the hot object. The object will cool down and at a certain temperature the oil will stick to the object and self-ignite. Extinguish the flames and keep on rubbing in more oil. It will smoke a lot. By now you should have a black(ish) finish. If you are happy with the appearance, let it cool down. If you want it to be blacker, rub in more oil and keep the object so hot that it smokes when you apply more oil. This will give a non-glossy finish. If you continue rubbing in oil at lower temperature, the finish will be more glossy. If you finish at room temperature, you will get a quite shiny finish. Thick objects will keep the heat longer and may not need a reheat to get the desired finish. Thin objects, however, will cool down too quickly and have to be heated between rubs. Don't heat too much, or you'll burn off the previous layer. If the burnt oil won't stick to the metal, heat to a higher temperature and try again.

Ralph Snel

A Hammers' Blow Coffee Cup Winner !!

If you want to draw an Ellipse, you will need to know its narrow dimension. In this case, it's width (A). You can draw the ellipse with a pencil, ruler, two thumb tacks and a square.

1. Lay out two lines at right angles to each other. Where these lines cross, label it (C).
2. With a ruler or dividers layout on the vertical centerline two reference points, 1/2 the length of (A) and mark these (D) and (E).
3. Next mark off reference point (F) which is from the center (C) on the horizontal line.
4. Attach a string to a thumb tack and press it into the drawing board at (D). Wrap the other end of the string around the second tack and press it in at (E). With a pencil at (F) and with the string tight, make your line by moving the pencil around on the tight string and you will have an ellipse.

Bob Becker

A Hammers' Blow Coffee Cup Winner !!
Echos of the 'Ring'

These process drawings came from the Spring, 1984 issue of *The Anvil's Ring* (Volume 12, Number 1). They were originally printed in the May, 1934 issue of *Pencil Points*.
Apprentices' Notebook

Die Forging:

Why die forge? When you need a large number of pieces, usually as components of a bigger project it is time to consider making a die. Conversely, if you have a component or an effect that you use periodically in small numbers it is also time to consider a die.

Although a lot of closed die forging is done with a power hammer, there is much that can be done with a treadle hammer. (NOTE: Realize that die forging with a power hammer is potentially dangerous, much more than direct forging of stock. If you have never done it, find someone who does it safely and learn from them.) The example in this section is a small die designed to produce a part for cabinet handles from 3/8" round mild steel or bronze.

The beginning of making a die is to make the die master (Fig. 1). A die master is a carefully formed original piece which the die will produce copies of. As you forge and file the master be sure to leave it on the parent stock. This will act as a handle when it is time to sink its impression into the die blank.

Tool steel or not tool steel, if that is a question then consider the amount you will use the die. Almost invariably you will be glad you used tool steel. However, mild steel can be used for short run dies with little detail. Mild steel will do even better if you CASE HARDEN the die faces. Case hardening is a process that can be done in the forge. It uses a commercial material to face harden the dies so the mild steel stands up to severe usage.

Making The Die Blank:

For the die in this example two pieces, 5/8" x 2", of Atlantic 33 tool steel were used. To make forging the handle sections easier, two pieces of stock longer than needed for the die were used. They were cut after the forging was complete.

Take a series of heats and draw out about 2" of the 5/8" x 2" stock until it is approximately 3/16" x 1" x 12". The handles should be flexible when they are done. Measure just over 2" of unforged stock past the handle and saw off the blank. Repeat the process, this time drawing out 2 1/4" of the 5/8" x 2" stock. This will make the second handle about 1 1/2" longer than the first (Fig. 2). Take a heat on the unforged blank ends, step the handles down from the blanks as shown (Fig. 3).

(Fig. 3)

(Punch or drill two holes, about 1" apart, in the end of the shorter handle (also Fig. 2). Use these as a guide to punch the holes in the other handle. To do this, use a slightly tapered round punch and after you have aligned the handle ends evenly, cold mark through one hole into the unpunched stock. Take a heat and punch that hole. Run a bolt through the hole in both handles to align them and cold mark through the other hole. Disassemble, heat, and punch the other hole in the longer handle. Heat and bend the longer handle as shown in (Fig. 4). Bolt the handles together and adjust the top one until the die blanks are aligned. Punch, form and add the 'U' shaped piece to the top handle as shown in (Fig. 5). This piece keeps the handles and thus the dies aligned over each other. Replace the two bolts at the end with rivets and your die blank is ready for the die master.

(Fig. 4)

(Fig. 5)
Sinking The Die Master

When a die master has all round sections it can be inserted between the die blanks without regard to its cross-section. If the die master has a square section as part of its design it should be inserted between the die blanks on the diamond (Fig. 6). If you need to, clamp the stock end of the die master in a vise-grip. Positive control of the die master is important as you sink it into the hot die blanks.

Insert the die blank into the fire, raise a heat slowly. The inside faces of the die blanks must come to a high forging heat without burning the outside of the blocks in the process. Localize the heat to the die blocks as much as possible, use a wet rag on the handles. When the blocks are thoroughly at a high forging heat open them and insert the die master. Move quickly to the treadle hammer or power hammer and seat the blocks with a moderate stroke. Rotate the die master a quarter turn and apply another stroke or two. I usually flip the die, rotate the master another quarter turn and hit it again.

A small die master will sink quickly. It will also heat up quickly so you must work with deliberate speed. If the die master starts to take on color remove it and quench it. Reinsert it carefully and finish driving the blocks down until they make full face contact. Remove the die master and normalize the completed die in the fire and heat-treat it as per the requirements of the tool steel it is made of.

Using The Die

In some cases it is necessary to prepare the stock blank in a forging process prior to die forging it. This may entail drawing down or upsetting certain areas of your blank to put enough steel or bronze where you need it. In this example it is sufficient to use a 3/8" round rod at a high forging temperature.

There are several approaches to die forging. One is to progressively work the forging, displacing (extruding) the surplus stock out of the end of the die. The other is to set the blank hard with the die. This squeezes much of the surplus material to the sides as flash which is chiseled or filed off. The rough dressed forging is reheated and finished in the die.

At a high forging heat, insert the blank stock into the die and rotate it as you drive the die with treadle or power hammer. As with the die master, rotate the stock in quarter turns if the die form has square sections. If it is round then you do not have to orient the form as you rotate and forge the stock. Remember, you cannot be too careful forging with power!
Project

Cabinet Handle
3/8" round

This handle design uses the die forged form that was the focus of the Apprentices' Notebook section. (You can make a similar handle without die forging, just omit the knobs or forge them directly by hand).

To make the handle component, die forge one end of a 3/8" round bar. Measure 1 1/2" from the knob and die forge the other end of the bar (Fig. 7). Carefully forge the remaining 3/8" round stock, between the die forged ends, down to the same square dimension of the die forging.

Once the square section in the center of the forging is even and straight, counter-twist it. To counter-twist you take a heat on the square part of the handle, quench half of it and twist the other half clockwise. Take another heat, quench the twisted section and twist the remaining half of the square section counter clockwise the same number of turns.

Bending The Handle

Use a bending fork held in a vise to make the bends in the handle. If you don't have one you can bend a 3/8" or 1/2" round bar into a tight 'U' shape and hold it, legs-up, in a vise.

Chalk Jig: When you need to do a short run of of repetitive bends or forms, chalk the back of a full size drawing of the part. Place this chalk-side down onto a steel plate (smooth but not shiny) and carefully draw over the lines with firm pressure. This will transfer the drawing to the plate. With tongs and pliers, bending fork and wrench or hammer and anvil (depending on the size and desired shape of the parts) form and bend in stages. At each stage lay the piece on the chalk lines of the tracing. Compare and adjust the part hot on the plate as you conform the hot metal to the drawing.

If you do each stage to all of the parts in turn you will end up with an accurate run. By comparing and adjusting parts to a drawing or a prototype you will eventually develop a sense of comparative accuracy.
Project

Cabinet Handle continued

Backplates
16 gauge mild steel -
Forge textured

Draw a pattern on paper. Cut it out and use rubber cement to fix it to the metal. Chisel lightly around the pattern to transfer it to the sheet metal. Chisel out the backplate with repeated passes. Dress the chisel cut edges with a file as needed. You will need less filing and have less distortion if you make multiple passes to chisel the sheet metal. The pattern could be cut with a saw, but a chisel cut done properly will result in an edge that looks finished. A saw cut will take a lot of file time to achieve the same edge that a careful chisel cut gets by default.

This backplate will be held in place by a single decorative eyebolt. There are two ways to prevent it from moving, spinning, after the handle is installed. One is to bow the backplate out slightly, this tensions the backplate as it is drawn down tight. The other way is an old approach. Take a small, very sharp chisel and cut a burr on the back of the plate. This will dig into the wood of the drawer or door as the eyebolt is tightened and keep the plate from spinning.

Decorative Eyebolt
3/16" x 1/2"

Layout, butcher and draw out the 3/16" x 1/2" into a tenon as shown in (Fig. 8). Forging a tenon is covered in The Hammers' Blow, Fall 1995.

The tenon should be 1/8" in diameter, use a 1/8" spring swage to true it up. The finished length should be what is required to pass through the backplate, the drawer or cabinet wood thickness and a washer-nut combination. Bevel the end of the tenon to ease on a threading die and cut threads for about 3/8" (Fig. 9).

Measure 1/2" from the shoulder up the 3/16" x 1/2" bar and cut the tenoned, threaded blank off (Fig. 10).

Break the two outside corners of the decorative eyebolt with a file as you also break the square stock edges to soften the look. Mark center of the flat face and drill it to receive the handle (Fig. 11).

This style handle may be assembled in the process of installation or the tenon-like prongs on the end of the bent handle can be upset cold after being inserted through the decorative eyebolts.
Door Handle

This type of handle is a lever style with an escutcheon. The escutcheon is the decorative plate that centers the handle over the mortise lock in the door. It can be just about any shape. The escutcheon is usually flat stock although it can also be formed, as in a repousse dome. In the center of the escutcheon is a boss that supports the handle.

A lever handle is a graceful piece of hardware to make. A consideration for your design is that too much weight off center will throw the action of the mortise lock and open the door. There are mortise locks that are made for lever handles. They have a stronger return spring to accommodate the eccentric loading of the lever. It is a good idea to buy one if you plan to develope, or prototype, lever handles.

A door handle can be made to fit almost any commercial mortise lock, or mortise and spindle set, if you keep a couple of simple aspects in mind. First, be sure your escutcheon design covers the cut-out in the door. On a custom door you should coordinate with the door maker and let them know how little you need. Next, realize that most mortise locks have a 5/16" square threaded spindle that ties the doorknob or handle to the mortise lock. This threaded spindle is set on the diamond, a point to remember when you layout setscrew holes in the handle base.

Making The Escutcheon

Stock 1/8" x 2" x 2"

For this example a piece of 1/8" x 2" mild steel stock cut 2" long is used. Take it to a forging heat and feather (thin) the edges for 1/2" in all around the piece. Flatten the blank so it makes full contact with the crowned side up.

Draw a pattern complete with a center punch mark and glue it to the flattened blank. (A symmetrical pattern can be made by folding a piece of paper twice. Draw a quarter pattern on one face with the center towards the inner fold. Cut out the quarter pattern and unfold. The creases will cross where you should center punch for drilling). Lightly incise through the pattern with chisels that conform to its shapes. Once the pattern is chisel-cut into the blank cold, take a heat if the blank is much over 1/16" thick and progressively cut it out. Dress the finished cutout as needed to smooth or highlight it with files. Drill at least two mounting holes for small wood screws. Drill the center hole 5/8" in diameter, this is where the boss will be seated. In this example the boss is made from 7/8" round stock which will have a 5/8" tenon on its base.
Door Handle

The Boss

Forge a short 5/8" diameter tenon of the end of a 7/8" round bar. Cut the tenon back to a length just over 1/16" longer than the thickness of the escutcheon plate at the point the center hole is drilled (1/8" thick escutcheon center + 1/16" = 3/16" long tenon). Mark and saw the 7/8" bar 5/8" up from the tenon shoulder (Fig. 12).

Mark the center and drill a 3/8" diameter through hole. A good idea is to mark center on both ends and drill to the middle from both ends. This prevents bit travel from ruining your work. Next, in the 7/8" diameter end of the developing boss, drill a 5/8" diameter hole 1/2" deep. Switch to a 5/8" counterbore (This is a fluted tool with a standard 1/2" diameter shank that fits the drill press chuck. They can be had at most industrial supply firms.) and gently feed it into the 5/8" hole cutting a square shouldered bottom to the hole. The finished hole should be 5/8" diameter, 1/2" deep (Fig. 13). File the top rim to soften the look of the boss.

Assemble The Escutcheon

Chamfer (bevel) the back of the 5/8" hole in the finished escutcheon plate. Slip the tenon of the finished boss in from the front side of the escutcheon. Support the boss on a piece of bronze or aluminum and hammer the protruding tenon material over into the chamfer (Fig. 14). Pass a 3/8" drill bit through the hole in the back of the boss if the hammer work distorts it.

Forge The Handle

Stock 5/8" round

The handle in this example is a simple design. As with the escutcheon, the handle design can be whatever you wish. Contemporary or traditional motifs can be applied to the mechanics that are the core of this project.

Square and draw out the end of of a 5/8" round bar until you have a taper running from 1/4" x 1/4" at the end to 5/8" round in 6". Reforge the stock to round and then flatten the tapered round to an oval cross section (Fig. 15). Draw the last inch down to a thin terminus.
Door Handle

Forge The Handle

Measure up 1" from the start of the taper and bend the bar 90 degrees. Saw it off the bar 1 1/2" past the bend (Fig. 16).

(Fig. 16)

Roll a small scroll at the end and give the taper a soft curve.

(Fig. 17)

Set screw holes drilled 45 degrees off the verticle.

Mechanical Aspects

Find center on the saw cut end of the handle. Drill a 1 1/4" deep hole and tap it for 5/16" threads. This will allow the handle to be screwed onto the square, threaded spindle of the mortise lock. To keep the handle in place once it has been screwed onto the spindle, a pair of set screws are added. Remembering that the square threaded spindle is set on the diamond in the mortise lock, drill and tap a pair of holes for #10 allen-head set screws as shown in (Fig. 17). Keep the location of the set screws outside of the rim of the boss.

(Fig. 18)

Another approach is to make the mechanical aspect of the handle with a tenon where the bend would have been. Forge or chisel a decorative handle from flat stock, punch a hole in it and set it with the tenon (Fig. 18). The example on the front cover was done in this manner.
Motif:

Contemporary Bar Effect
Stock: 5/8" x 5/8" x 30"
Inspired by an evening at the forge with Jay Burnham-Kidwell.

Take a heat in the center of the bar and fold it back onto itself (Fig. 19).

(Fig. 19)

Take a high forging heat at the bend, set the bend on the edge of your anvil or power hammer die and start to pull (spread) the material out from the fold (Fig. 20). Work around the curve of the bend as it makes a transition into the straight bar sections.

(Fig. 20)

After the decorative flange has been worked out to your satisfaction, take a heat and open the fold. The fold can be opened across the forged axis or along the forged axis for two different effects (Fig. 21). The effect works in round as well as in square stock.

Yet another variant is to fold the bars as shown in (Fig. 19) but hold them stacked on top of each other instead of side by side. Hammer the flange out and open them.
Fundamentals of Blacksmithing

Hammer Configuration

Wear Your Safety Glasses

If there is any one problem that comes between beginning smiths and hot metal it is their hammer. The style of hammer matters far less than the configuration and condition of its face and peen. Square or round, the face of your forging hammer should be slightly crowned with gently radiused edges. There should be a seamless transition from the center of the face to the side of the hammer. Facets, or severe transitions from face to side, can cause dent-like depressions that are hard to smooth out.

The peen of your cross-peen or straight-peen forging hammer is as important as the forging face. All too often it is poorly shaped and in need of dressing. The most common problem is to have the peen too narrow across its face. The peen is used to draw or spread material directionally. If the peen is too narrow across the face then its impacts leave a series of deep marks that are difficult to smooth out. A peen should be dressed so it has a broad, slightly crowned, face with the edges radiused.

If the face and peen of your forging hammer are properly dressed they will move metal much more efficiently and without leaving pronounced marks. To dress them, it works well to use a belt sander with a dull, used belt. There is less chance of taking too much material off if the belt is worn. Some belt sanders have a 'slack' belt position, a area where the belt is not backed with a platen. This area is easier to use to for dressing since the platen backed belt tends to produce facets. In any case, use a light pressure and a rolling action to dress from the center of the face out to and around the edges. Do the same for the peen. Finish the dressing on a buffing wheel with several progressively finer grits of buffing compounds.

Drawing Out

Drawing-out is a forging process that lengthens a piece of stock while at the same time reducing one or both cross sectional dimensions. The ability to draw-out stock while maintaining either the width or the thickness of a bar, or to taper all four side as you lengthen it allows you to make a varied range of effects.
Fundamentals of Blacksmithing

Drawing Out

You can draw-out stock with the face of your hammer while the stock is flat on the anvil. This is the least efficient method because the symmetrical face of the forging hammer moves stock in all directions. If the hammer is properly dressed you can angle the blows using the radiused edge of the hammers' face to move metal in a specific direction.

Another way to draw-out stock is to move the hot stock across the horn of the anvil as you drive it down with the hammer. The rounded horn acts like the peen and rapidly draws-out the stock. The metal is then smoothed on the face of the anvil.

You can draw-out using the peen of your hammer. This moves the metal in a localized and specific direction. Generally you alternate between the peen and face in each heat when drawing-out stock aggressively. The peen sinks in, displacing metal and then flipping the hammer and using the face pushes down the undulated surface, smoothing the stock as it further draws it out.
Fundamentals of Blacksmithing

Drawing Out

A common problem in drawing-out stock is getting a parallelogram instead of a square cross section (Fig. 22). To correct, or square a parallelogram, rotate the stock onto a protruding corner and drive down the opposite top corner (Fig. 23). Take another pass down the bar with your hammer to true up and square the edges. It is best to be aware of the tendency of mild steel to form a parallelogram and to correct it constantly as you draw it out. As with everything, work progressively and develop the effect with control. Speed will come as you practice.

A good way to start your forging session is to draw out a piece of stock, watch the process as you impart it and develop the hammer control you need.

If you want to achieve a sharp edge on stock it is necessary to planish (light, repetitive blows that compact the surface without distorting the body of the piece) the stock as it loses heat. At a high forging heat the material displaces in soft looking bulges as you hammer it. At this temperature it is difficult to get the sharp edge that hammering at a black heat will give you.

Drawing-out Round Stock

The first step in drawing out round stock is to forge it square. Although you can draw round stock, forging as you roll it, it is much more practical and efficient to square it and then draw it out.

Once the round stock is squared, draw it as you would any square stock. When the stock is drawn to the desired length (if the finished length is critical, realize that the rounding process will continue to slightly lengthen the stock) take another heat, lay the square taper on the diamond across the anvil and start to hammer the top corner down. After you flatten the corner, turn the bar onto the other corner and repeat the process.

Watch the development of the facets closely. You want to achieve eight roughly even and straight sides on what had been a four sided bars. In larger stock you would take the eight edges and work them down to sixteen. On small stock eight facets is enough. At an orange heat, start to roll the bar while hammering the surface with light, repetitive blows. This work the facets into many small areas of impact that will appear very smooth.
Fundamentals of Blacksmithing

Spreading

Spreading uses the face of the forging hammer. When you spread hot metal with a hammer the metal moves in multiple directions. A 'fish-tail' on the end of a bar (Fig. 24) is an example of spreading.

Take a bar, 1/4" x 1", an heat its end. Hammer down onto the last 1" of the bar and you will get the fan shape of a fish-tail as the stock spreads to both sides as it lengthens. To maintain a symmetrical fan shape, start hammering down onto one side. As the fan shape begins to develop and while the stock is still around half the original thickness, flip the bar. Forge the fan shape to completion. Almost everyone imparts some unevenness to their work. By flipping a blank half way through the forging process that unevenness is imparted equally to both sides making the resulting piece even.

Spreading can also be used in the middle of a bar (Fig. 25). The material can be pulled out with the face of the hammer. Work both sides of the bar progressively. If one side is worked to completion first, the process will curve the bar. Working the other side will bring it back towards straight but it is easier to maintain than to correct an effect.

Motif:

Traditional Bar Ending Effect
Stock: 3/16" x 1 1/2" x 20"

Start 1 3/4" back from one end and for the bar down on edge. Work opposite sides as well as the face to avoid a fold. Keep a well defined shoulder and taper back for 6" to 8". See (Fig 26).
Motif:

Traditional Bar Ending Effect

Work the square end on the diamond. Take the corners down to facets, this gives you eight sides. (If you want a round bar ending just continue to work the corners down to round. Rock the end on the anvil face as you forge to avoid developing a flat spot on the bottom). Move the bar end from corner to corner as you forge the square down to eight sides.

Set the eight-sided bar end on one of its corners. Start to forge it down to a square-on-the-diamond effect. Keep working around the four developing sides equally. The result will be a thick square-on-the-diamond bar ending.

Take a heat and spread the material out from the center. As you feather out the blank set it on edge and true the lines of the square. The edges should be pulled out to 1/16" in thickness while the center is worked down to 1/8".

Glue a paper pattern onto the finished blank and transfer the layout with light chisel cuts. Take a heat and cut the pattern out. Work around the pattern evenly to minimize distortion. It is much easier to maintain a shape than to correct one.

To give the flat motif a three dimensional look, take a heat and lay the bar end face down onto a hardwood block. Use a ballpeen hammer like a set hammer, ball down on the back of the effect and drive it with another hammer. The wood will burn out as the hot metal is forced down into it, this gives the piece a gentle domed form.
Conferences & Events

1996 ABANA Conference, June 26-30

Once every two years there is a major event in the world of blacksmithing, the ABANA Conference. This is an opportunity to meet fellow blacksmiths, attend excellent forging demonstrations and presentations of a wide range of educational topics related to blacksmithing. It will be held in Alfred, New York.

Demonstrators will include Clifton Ralph, Tom Latane, Tom Joyce, Peter Ross, Carl Close, Mike Bondi, Bob Bergman and many others. For more information call: 716-268-7383 or Fax 716-268-5152

February 13 - April 21
National Ornamental Metal Museum
"The Commemorative Cup"
An exhibition of unique silver vessels designed by fifty contemporary American artists. Each cup represents a personal or present day issue to the artist. This will run concurrently with "Contemporary British And American Silver Servers: The Rabinovitch Collection" This exhibition represents the work of forty-two British and American silversmiths. These modern pieces exemplify the relationship between function and form in one-of-a-kind, hand-crafted objects.
374 Metal Museum Drive
Memphis, Tennessee 38106-1539
(901) 774-6380

March 14 - 17
California Blacksmiths' Association Spring Conference. This will be held in Tulare, California.
(209) 688-4766

April 19 - 21
The Eighth Annual Bladesmithing Symposium
At Hatfield Lake, Athens, Alabama. A wide range of artisans will demonstrate their craft. This will include hands-on Mini- Seminars will be taught on folders, scrimshaw, carving, sheath making, grinding, blade forging, wire inlay, file work, simple engraving, etc.
The Symposium entrance fee is $85.00 per person. Please pre-register. Send registration and entrance fee to Barbara Batson, 176 Brentwood Lane, Madison, AL 35758 (205/971-6860).

May 10 - 12
North Carolina Chapter of ABANA Spring Conference
To be held at the Denton Farm Park, Denton, NC
Contact Tal or Kim Harris (704) 843-5586

Call For Board Nominations:
Deadline: July 15, 1996
It's time again to send in nominations for the ABANA Board of Directors. Nominees shall submit an endorsement containing at least 10 signatures of ABANA members in good standing. Nominees should also submit a resume and photograph with their petition. This information must be postmarked no later than July, 15, 1996 and mailed to ABANA's new office address:
ABANA PO Box 206 Washington, MO 63090

Hammers' Blow Coffee Mugs!
You can get one free if your Shop Tip is selected as Best Beginner or Best Intermediate/Advanced Tip. OR.......you can buy one from the ABANA office for $5.00 plus shipping. (Free is definitely better!) They are light gray with the new HB logo on one side and our anvil toting assistant on the other.

Opportunities:
A learning position at a historic blacksmith shop under the direction of Payne Junker Studio. Position from June through October, some experience would be helpful. Contact: Junker Studio, RR 1 Box 306P Chester, Vt. 05143

Custom architectural metalwork studio seeks an experienced blacksmith with layout experience. Full time, part time or short term position available. Send resume to PO Box 30, Chester, NY 10918

For Sale
Buffalo Forge, large. Up and down handcranked version. Comes with hood, stack and 500lbs. of blacksmith's coal. Located in Ct. $300.00
Contact: Dave at (203) 798-2827
ABANA
MEMBERSHIP APPLICATION

NAME __________________________ PHONE ( ) __________________________
ADDRESS(Street) __________________________ (POBox) __________________________
CITY __________________________ STATE _______ ZIP __________

Indicate type of membership applying for:

☐ REGULAR MEMBERSHIP $35.00 ☐ FULLTIME STUDENT $30.00
☐ SENIOR CITIZEN (65+) $30.00 ☐ CONTRIBUTORY MEMBER $100.00
☐ OVERSEAS AIRMAIL $70.00 ☐ PUBLIC LIBRARY $25.00
☐ OVERSEAS SURFACE MAIL $50.00

I __________________________ hereby apply for membership in the Artist-Blacksmiths' Association of North America and enclose $ ______ as my annual membership dues for one year (subscription included).

☐ CHECK OR MONEY ORDER ENCLOSED (WRITTEN ON U.S. BANKS ONLY) ☐ VISA ☐ MASTERCARD

CARD NUMBER __________________________ EXP. DATE (REQUIRED) / 

★Send to: ABANA, P.O. Box 1181, Nashville, IN 47448 Or phone with VISA/MasterCard by calling (812) 988-6919

Bealer Memorial Forge
Birthplace of ABANA
Westville, GA
April 13, 1996, 10AM
David Fink and Jeff Mohr

Forging on the River III
River Bluff Forge Council
April 13--14, 1996
National Ornamental Metal Museum
Memphis, TN

Blacksmith's Guild of the Potomac
Spring Fling
April 19--21, 1996
Warrenton, VA

Northern Minnesota Blacksmith Conference
Bemidji Metalmiths / The Guild of Metalmiths
April 27-28, 1996
Bemidji, Minnesota

Ozark Conference
Blacksmiths Association of Missouri
May 3--6, 1996
Potosi, MO

Northern Rockies Blacksmith Association
and Northwest Blacksmith Association
Special Spring Conference
May 17--19, 1996
Stephensville, Montana

Mississippi Forge Council
Annual Conference
May 25--26, 1996
Pelahatchie Shore Park, Jackson, MS

Indiana Blacksmithing Association
Tipton, Indiana
June 1--2, 1996

Illinois Valley Blacksmithing Association
June 8--9, 1996
Pontiac, IL

ABANA Conference
June 26--29, 1996
Alfred, NY

Banging on the Bayou III
Louisiana Metalmith's Association
August 1996

Rocky Mountains Smiths
August, 1996
Carbondale, CO

Alabama Forge Council
September 6--8, 1996
Tannehill State Park
Mc Calla, AL

Florida Artists Blacksmith's Association
October 1996
Barberville, FL

Regional Events
Contributed by Clay Spencer

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