

# N.J.B.A. Newsletter

NJBA Volume 21, Issue 3

15 Feb. 2018

## Upcoming Events

*Many of our meets feature an "Iron in the Hat" drawing (fund raiser), so be sure to bring a contribution. Tailgate sales are permitted at many of our events. Look for more details on later pages. See p. 2 for Directors' contact information.*

### **Sat., Mar. 17., Damascus Workshop**

Similar to previous such workshops. \$150 fee + \$35 materials fee. See announcements, below.

**Sat., April 21., Knifemaking Workshop** Similar to previous such workshops. See "Knifemaking and Damascus Workshops" announcements, below.

### **Sun., May 20, Walnford Day**

NJBA will demonstrate blacksmithing to the public. Members are welcome to participate. Contact NJBA Director Bruce Freeman for info.

### **Sat., May 26. Advanced Damascus Workshop**

More advanced than previous Damascus workshops. See "Knifemaking and Damascus Workshops" announcements, below.

### **Sat., June 9. Anvil-Repair Workshop**

Registration fee (\$50) due by April 15. See detailed announcement, below.

### **Sat., July 7. Princeton U. Open Forge Meet**

Princeton U. will be hosting a summer open-forge meet for students. Volunteers are solicited to help. Contact NJBA Director Ryan Amos if you would like to assist.

### **Mon.-Sun., Aug. 6-12. Middlesex Co. Fair**

NJBA has been invited back to the fair. Volunteers will be needed to help man our forges from 5-9 PM all seven days. Contact NJBA Director Bruce Freeman if you'd like to participate.

### **August 19, Red Mill Picnic and Tailgate Sale.**

Mark your calendar.

## Knifemaking and Damascus Workshops

Each of these three workshops (See "Upcoming Events") is limited to 6 participants. The fee for each is \$150 (plus your \$20 membership dues payable at workshop, if you haven't already paid). A \$35-\$50 material fee (depending upon the workshop) is due when registering & reserving your place in the workshop. Contact NJBA Director Mark Morrow for further information. and to register. (**Note:** Text Mark if you can't reach him otherwise.) Tailgate sales welcome.

*Note: Tasks performed at these workshops are limited to the projects being taught and no other. If you have other tasks, please bring them to our Monday open forge meet in Howell.*

## Anvil-repair Workshop

NJBA will be holding another participatory anvil-repair workshops on Saturday, June 9, 2018. The price per anvil will be \$150 for ordinary repairs on edges, faces, and hardy hole, but additional charges may be assessed, depending upon the size and condition of the anvil. A registration fee of \$50 per anvil is due by April 15.

Participants will be expected to assist with the work involved. Participants should expect to have to grind the excess weld bead on their anvils themselves. Instruction in these tasks will be available.

Contact NJBA Director Al Mottram if you are interested. Please provide high resolution photos of your anvil edges, top, each side and bottom so we can estimate your repair costs.

Assistance from nonparticipating members is also welcomed. *Come see how we fix anvils!*

Tailgate sales welcome.

# **New Jersey Blacksmiths Newsletter**

## **NJBA Board of Directors**

We like to thank those who joined NJBA as  
Business Members:

**Marshall Bienstock**

**Eric Cuper**

### **East Jersey Olde Towne ...**

... still needs blacksmith demonstrators. Contact Matthew Stroh at EJOT 732.745.3030 Ext 304. More info. at <http://www.middlesexcountynj.gov/Government/Departments/BDE/Pages/East-Jersey-Olde-Towne-Village.aspx> or from Bob Bozzay ([robert.bozzay@gmail.com](mailto:robert.bozzay@gmail.com)) ([robert.bozzay@gmail.com](mailto:robert.bozzay@gmail.com)).

### **ABANA CONFERENCES -- 2008 & 2010**

**Wed., Jun 27 – Sat., 30 Jun, 2018.** ABANA 2018 Conference Meadow Event Park Richmond, Virginia. Visit [ABANA.org](http://ABANA.org) for further information.

**Summer, 2020.** ABANA 2020 Conference. To be held near Saratoga Springs, NY. At this past Ashokan meet, Bruce volunteered the loan of our lightweight forges. For information or to volunteer for this event, contact Rand Condell at the Adirondack Folk School, 518-696-2400, P.O. Box 2, Lake Luzerne, NY 12846

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## **Official NJBA Address**

**NJBA, P.O. Box 224**

**Farmingdale, NJ 07727-9998**

## **NJBA's Website:**

<http://www.njblacksmiths.org>

## **NJBA's Facebook Page:**

<https://www.facebook.com/njblacksmiths/>

## **NJBA's Private Yahoo Group...**

Send an email to [crankybellows@gmail.com](mailto:crankybellows@gmail.com), including your name e-mail address, and an invitation will be sent to you.

## **NJBA's IForgeIron subforum:**

Scroll down at

<https://www.iforgeiron.com/>.

## **NJBA Newsletter:**

[njblacksmiths.org/archive/index.htm](http://njblacksmiths.org/archive/index.htm)

or use the link on the NJBA web site for the newsletter.

## **Open Forge Meets**

Anyone 18 years or older is welcome to try their hand one time at our open forge meets. NJBA members may participate any time the forge is open. (The application form is on the last page of this newsletter.)

### **Monday Night Open Forge, Howell, NJ**

NJBA Director Marshall Bienstock hosts an open forge meet every Monday evening at 7 PM, except major holidays. (Please call ahead on holidays to make sure the forge will be open.)

### **Sunday Open Forge, Smithtown, LI, NY**

**From the beginning of November through the end of April**, Ron Grabowski will open his forge in Smithtown, LI, NY, to NJBA members. Please call ahead to confirm and get directions: 631-265-1564. [Ronsforge @aol.com](mailto:Ronsforge@aol.com)

## **Report on the NJBA Holiday Party**

Jan and Marshall hosted yet another Holiday Party on Dec. 3, at their home in Farmingdale. We had a small but congenial crowd, and the pot luck dinner was very satisfactory.

## **Participation in Hands-On Events**

Participation in NJBA-sponsored hands-on events is limited to adults (i.e., 18 years or older).

This rule was effected as of December 2016, when NJBA was having problems with its insurance coverage (which has since replaced).

This policy applies to workshops, open forge meets, demonstrations, etc.

This policy *does not* apply to open forge meets and similar events that are sponsored by youth-oriented organizations such as scouts or schools with the aid of NJBA equipment and members.

## **New NJBA T-Shirts Now Available**

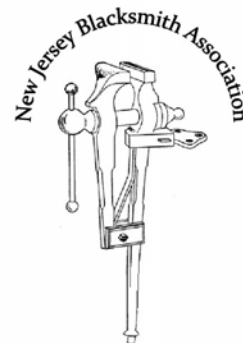
We have recently received our new NJBA T-shirts. These navy blue heavy-duty pocket T's bear the anvil logo (below left) on the pocket and the vise logo (below right) on the back.

Prices are \$20 for sizes M, L & XL, or \$25 for sizes 2XL & 3XL.

NJBA Sweatshirts are still available at \$25 each for all sizes.

These T-shirts and sweatshirts may be purchased at our Monday evening open forge meet at Marshall's Farm, and we expect to have them available as well at our upcoming workshops and meets.

For further information, contact NJBA Directors Bruce Freeman or Marshall Bienstock.



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## **Highlights of the February Board Meeting**

NJBA Directors Al Mottram, Damian Toryak, Marshall Bienstock, Ryan Amos, Bruce Freeman, and Larry Brown, and NJBA member Dan Lapidow were in attendance.

Coal. We'll need a warmish day to rebag some coal we have.

T-shirts. The new T-shirts have been received and are on sale at Monday evening open forge meetings and other events. (See p. 3.)

Sweatshirts are available for \$25 each.

"Shed" for the NJBA Equipment. Marshall has donated a 40' storage container on his back lot. Half of this container will be NJBA's to use; the remaining half will be for Marshall's use. We had 20 tons of crushed concrete, and Marshall leveled it for a pad. Marshall, Al and Bruce have repaired or replaced the floor joists, moved the container onto the pad, and cleaned it out. The remaining tasks include: Jack up the center of the roof to bow the roof upwards for drainage, and install roof supports. Divide container by some means to Marshall's half and NJBA's half. Repair the roof. Install wood or hardware on the walls for supporting stored equipment.

Crane Rail Anvils. Former Director Dan O'Sullivan has donated several pieces of heavy rail for anvil-making. Marshall and Larry agreed to rough-cut these into anvils, on some day with enough daylight. The sales price of the rough-cut rail anvils remains to be determined.

Newsletter. There was some discussion of whether we should continue printing the Newsletter, or should instead send it by email. After some discussion, it was decided not to change current procedures, which involve mailing the Newsletter and also posting it on our website.

Princeton Open Forge. NJBA will hold an open forge meet for Princeton U. summer students Sat., July 7. NJBA members interested in assisting

## **Volunteers Needed**

Recently we've had to solicit volunteers for a number of events, including demonstrators for Wainford Day, the Middlesex Co. Fair, Waterloo Village, and our Red Mill Picnic, as well as volunteers to man coal fires and provide coaching to novices at open forge meets.

If you put yourself on this list, you will likely be contacted sometime this season about volunteering. (See the last page of this newsletter.)

Please contact NJBA Director Bruce Freeman by email or snail mail.

should contact NJBA Director Ryan Amos.

Picnic & Open Forge in Howell. NJBA will hold Picnic & Open Forge Meet at Marshall's farm on a yet-undetermined Saturday in September, and preferably listing a rain date in the announcement.

Anvil-Repair Workshop. The Board will require a minimum of six anvils for this workshop to run, with a maximum of maybe ten or twelve, and set a registration fee (refundable if the workshop is cancelled) of \$50 -- 1/3rd of the workshop fee -- due by April 15 (for the June 9 workshop).

Other Business. Eric Cuper, who participated most recently at the MAST open forge meet, rejoined NJBA as a business membership and was elected to the Board by the Board.

Ryan reports progress with his Princeton U. Blacksmithing Club.

Next Board Meeting. The next Board meeting was set for April 30, 2018, at 7:30 PM in Marshall's shop. NJBA members are welcome to attend.

NJBA dues are payable in June, 2018,  
and cover July 2018 - June, 2019.  
Check the address label on your  
Newsletter envelope to see when  
yours are next due.

## Controlled Hand Forging Lesson 20

### Forging a Fishtail

Text and photos by Dan Nauman

Drawings by Tom Latané

#### Lesson #20.

#### Unit: Forging a Fishtail

**Definition:** Drawing down is the reduction of the cross-sectional area of a bar.

**Intent:** To continue learning aspects of using the cross peen accurately for controlled tapering and even spreading.

**Tools:** Basic forging tools.

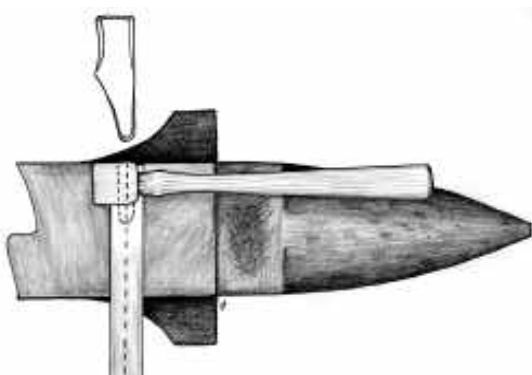
**Material:** 1/4" x 1" x 18".

**Note:** You may wish to review Lesson #19 which explains how the cross peen should be dressed, basic cross-peen forging, and cross-peen forging dynamics.

#### Step One

Heat 3" of the end of the bar to a full yellow heat, then lay the bar flat on the anvil with the end of the bar 1/8" in from the far edge of the anvil. You should be standing with your hammer arm's shoulder next to the anvil, and your body perpendicular to the anvil.

With the peen pitched down about ten degrees towards the end of the bar, and with the peen parallel to the length of the bar, begin striking the middle of the bar. (See image #1.)



1. With the bar held perpendicular to the anvil and its end even with the far edge of the face, the first blows of the peen land in the center of the bar.

The reason the peen is pitched is to begin forming the taper. The bar is near the edge of the anvil to reduce the chance of an errant blow damaging the face of the anvil. (See image #2.)



2a. The hammer head is tilted so the peen strikes the bar at the angle of the desired taper.



2b. Because the bar is held even with the far edge of the anvil, the corner of the hammer peen should never come in contact with the face of the anvil even if the blow lands a little wide of the mark. Working at a slightly rounded edge will prevent damage to the squarest edge of the anvil, should the bar slip back from the edge.

When the middle of the end of the bar has been reduced to 1/16" in thickness, slowly begin working the peen back into the bar, taking overlapping blows and creating a trough down the middle of the bar. Continue to work

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back into the bar with the peen pitched. As you work back, begin to lighten your blows so that the trough feathers out to the full thickness of the bar. The trough should end about 2 1/2" from the end of the bar. (See image #3.)

## **Step Two**

Heat 4" of the bar to a full yellow heat, being careful not to burn the thinned middle section of the bar. You can tilt the bar on edge to keep the thin middle section out of the direct blast of the fire. Place the bar on the anvil as in Step 1. Continue peening the bar, starting from the middle of the bar, then gradually moving out to the far edge. As the middle is already thinner from step 1, be careful not to get the middle of the bar any thinner than 1/16". Always maintain the peen parallel to the length of the bar. Move the peen in small increments, overlapping the track of each previous blow. Continue until you reach the corner.



3. Centered trough formed by cross peen, 2 1/2" long.

It is interesting to note that the length of the bar doesn't change dramatically in this process, because the shape of the peen is primarily forcing the metal to change the bar's width. Correctly executed, you will develop a corner as seen in image #4.

## **Step 3**

Heat 4" of the bar to a full yellow heat (remember to tilt the thin side away from the



4. After Step 2, the far corner should look like this.



5. Both corners have been peened out in this photo. This is what the fishtail should look like before refining with the face of the hammer.

fire blast), placing the bar on the anvil as you did in prior steps. This time begin striking the bar again in the middle, but now gradually work the peen towards the near edge of the bar, maintaining the peen parallel to the length of the bar. Again, move the peen in small increments, overlapping the track of the previous blow. Continue until you reach the corner. Do not get frustrated if the shape in this step starts out somewhat lopsided, as this is actually how



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the shape should look at this point, and through controlled blows, will begin to blossom into a fine and symmetric fishtail shape. (See image 5.)

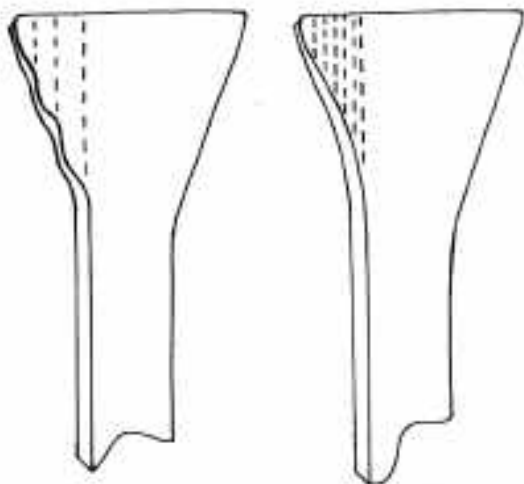
Note that the end of the bar remains fairly straight and perpendicular to the sides of the bar when properly executed. Though you should strive for this feature, do not get overly concerned if the end is not perfectly straight and perpendicular, as refining it will come later in Step 5.

As you get more experienced, you may choose to perform this step in the same heat along with Step 2.

If you encounter shapes as seen in images 6 and 7, you can work the area lightly with the cross peen to fill in the gaps in image 6, or to straighten the edges of image 7.

## **Step 4**

Heat the entire fishtail to a full yellow heat. With the face of the hammer, smooth out the cross-peen marks, maintaining an even lengthwise taper.



6. A wavy-edged flare results when the blows of the peen are too far apart. Narrow portions of the edge are thick portions of the taper. Direct blows at these spots

## **Step 5**

In this step we are going to refine the fishtail, by making the rounded corners of the fishtail more crisp and sharp, and refining the end and sides to straight lines. We will use the hammer's face to do the work.

Take a medium orange heat on the entire fishtail. Lay the bar across the anvil with the fishtail extending two inches beyond the far edge. Holding the cool end of the bar tightly against your thigh to help absorb shock, direct rapid light blows upon the end of the fishtail, driving the material toward yourself. If the fishtail buckles during this upsetting process, move the fishtail to the anvil surface to flatten. There may need to be several alternate rounds of upsetting and flattening blows before the end of the bar is straight and perpendicular to the centerline of the bar, along with a consistent lengthwise taper.



7. This is the position of the fishtail on the anvil to refine the shape. Refine at a low heat to reduce buckling.

Take another medium orange heat. Lay the bar on edge, with the beginning of the fishtail at a rounded portion of the near edge of the anvil, making sure the straight portion of the bar is off the anvil (See image 7.) Lightly hit the side of the fishtail to sharpen the corners. You will note that the corner you hit with the hammer sharpens faster than the corner on the anvil. Alternate sides so the corners

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sharpen evenly. If the fishtail begins to fold, stop hitting the edge, and flatten the fishtail back down with taps just hard enough to flatten, but not to squeeze the metal, which would further thin your work.

You may need to repeat this step, and take several heats to accomplish the desired shape (See image 8.)

**Note:** You do not want to get the metal any hotter than medium orange, as the material needs to be stiff enough to support the refining blows without folding over readily. This is one of the few times when cooler material is better.



8. The refined fishtail shape. Note that the centerline of the parent bar is centered also in the fishtail.

## **Forging dynamics:**

Image #9 shows the finished fishtail shape (left) that was made by the cross peen. The forging on the right, made by only the hammer face, has the same taper and end thickness, but not the same width as the forging on the left. Because the hammer face spreads material in all directions, for this exercise, it cannot forge the material as wide as the cross peen.

## **Targets**

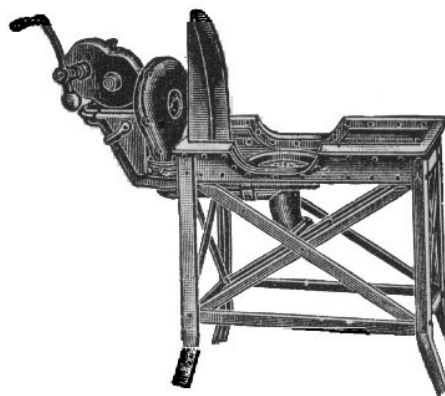
- Try to perform Steps 1-3 in one or two heats.
- The length of the fishtail should be 2 1/2" .
- The width of the end of the fishtail should be between 2 3/16" and 2 3/8" .
- The flared sides of the fishtail should be straight, and the end should be perpendicular to the length of the bar.



9. The forging on the right was made using only the hammer's face. It has the same taper and end thickness as this lesson's forging on the left, but could not achieve the desired width without sacrificing the other two dimensions

- The centerline of the fishtail and the parent bar should be the same.
- The fishtail should have a slow and even taper in its lengthwise cross-section.
- There should be no cross-peen marks in the bar

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The Hammers Blow  
Summer Issue 2007.





## Controlled Hand Forging Lesson 21

### Forging a Square Punch and Drift

**Text by Tal Harris**

**Drawings by Doug Wilson**

**Lesson #21.**

**Unit: Forging a Square Punch and Drift**

**Intent:** The student will learn to forge a square punch and square drift. Heat treating the punch will be covered in a future lesson. These tools will be used in a to produce a 3/8" square hole in a piece of 3/8" x 1" flat stock.

**Tools:** Basic tools, including tongs to hold the piece being forged.

**Materials:**

For the punch- 3/4" square W-1 Tool Steel, six inches long. W-1 is a water hardening tool steel that is suitable for tools that come in contact with hot metal such as the subject application. W-1 is readily available in small quantities shippable by UPS. A tool properly made from this steel will last for many years.

For the drift- 3/8" square hot-rolled mild steel stock 2-3/4 inches long.

**Forging a Punch Step 1**

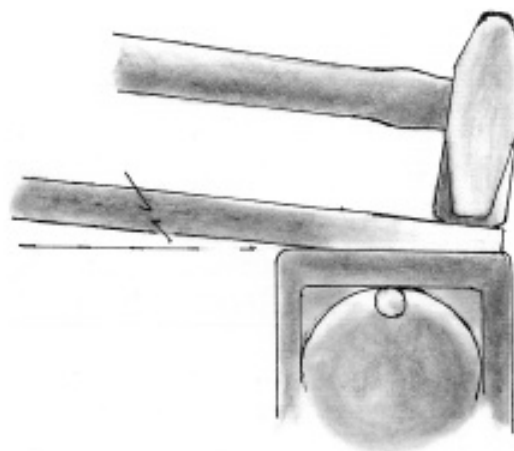
Forging the end of the punch that will be used to produce a hole.

To forge the end of the tool that will be used to punch a hole (hereafter called the "working end" of the tool), heat the end of the punch material to an orange-yellow heat and forge a taper three inches long.

**Note:** Tool steels typically are not forged as hot as mild steel. The alloying elements found in tool steels lower the melting point, thus the forging range. Overheated tool steel will generally fracture when forged, sometimes falling apart like cornbread. Ideally, tools should be forged in as few heats as possible to minimize

decarburization or "decarb" for short. Decarb is the loss of carbon at the surface of the material due to carbon migrating from the high-carbon tool to the lesser-carbon atmosphere. Carbon is the key alloying element in W-1 that allows it to be hardened. Loss of carbon lessens the degree or surface hardness the material can attain. A coal fire minimizes this affect as the coal provides a carbon-rich atmosphere.

To forge the three-inch taper start at the tip and forge back up the bar. Start forging the taper at the end of the bar, holding the end of the material being forged near the far edge of the anvil. This will allow the taper to be forged without hitting the face of the anvil with the hammer.



*1. Holding the material at an angle to produce the desired taper*

To forge a taper that is centered, the material should be held at a 4-degree angle to the face of the anvil as represented in the drawing, with hammer blows being struck with the hammer face at an angle of 8 degrees to the hammer face. Forge to a square cross-section, rotating the bar 90 degrees back and forth between hammer blows. If the proper holding and hammer angle has been maintained, the taper should be centered. Once the end of the bar has

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been reduced to 5/16" square, continue to forge up the bar three inches to complete the transition to the parent material. If more than one heat is required, be careful not to burn the material as the reduced section will heat quickly (you can tell you are burning the material because it will spark while in the fire).

The taper should make a smooth transition from the parent material to the end of the piece without any twist. W-1 is a tough material. With experience this taper should be able to be forged in three to four heats.

## Step 2

To forge the striking end of the punch, follow the same directions for the working end, but the taper should be short, 1 inch long, tapering from the parent material to 5/8" square. The angle of the taper will be almost identical to the working end of the tool. As this taper is short, it can be forged entirely over the face of the anvil and should be able to be forged in one or two heats. Occasional hammer blows directed at the end of the punch, as if striking it during actual use, will keep the end flat so no filing is necessary to achieve the properly shaped tool.

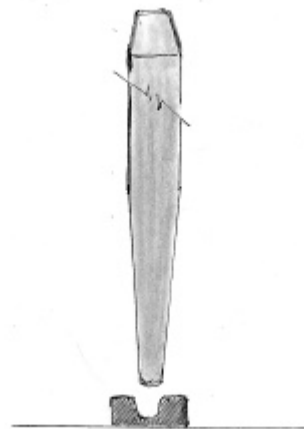
The purpose of this short taper is to delay the tendency of the striking end to "mushroom." It also helps to center the force of the blow during the hole-punching process.

## Step 3

Once forged, it is best to anneal the tool to relieve forging stresses and soften it for any cold working operations such as filing. During forging, tool steels tend to get "uptight." Just as a person who gets uptight needs to relax before they "snap," the same is true for tool steel. One definition of annealing is "The heating of metal and then cooling it at a slow, consistent rate, thus reducing internal stress in the work piece and making it softer and easier to perform cold operations including filing."

In this example, to anneal the tool it should be heated uniformly to an orange heat and then buried in lime or wood ashes to allow it to cool slowly. For a tool of this size, the quantity of lime or ashes required is about a gallon. The intent is to surround the tool completely so it is thoroughly insulated. It will take several hours to cool, so don't be impatient and search for the tool with your hand as a severe burn could be experienced. If properly annealed, the tool should cut easily with a sharp file. If not, repeating the annealing process may be necessary.

**Note:** Forge scale can greatly reduce the life of a file. An easy way to remove this scale is to soak the piece overnight in vinegar. Vinegar contains acetic acid and will dissolve the scale.



2. "Drag" caused by a dull tool. Drag is the tendency to pull some of the surface of the steel down into the hole to be punched, rather than cutting cleanly.

## Step 4

Once cooled (and only if necessary) file the ends of the tool to remove any unevenness from the forging. The working end of the tool should be square with sharp corners so it cuts its way through the material being punched. Important! Remember to file from the body of the tool towards the end to avoid getting cut on sharp edges of the tool. A tool that is not sharp

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will result in a hole that has a reduced thickness around it due to the “drag” of the tool.

As W-1 is a tough steel, and mild steel heated properly to punch and drift a hole is very soft, this tool may be used successfully in the as-forged condition, i.e., not fully heat treated.

**Note:** The square section of the punch has several advantages. Since the tool was forged without twist, the end of the tool that produces the hole is aligned with the body of the tool. This makes placing the tool to produce a hole of desired orientation much easier, whether the tool is hand-held or held with tongs.

Also a tool forged from square stock will not roll off the anvil.

The tool described is intended to be used as a hand-held tool. As always, extreme caution should be exercised when using any hand-held tool. Remember that a misplaced blow places your hand between a hammer and a hot place. Often the material being punched will automatically lead us to whether a tool can be hand-held or should be held by some other means, such as tongs. Small-sized stock does not radiate as much heat as a larger piece and a punch can be held with a wet or Kevlar-gloved hand.

For hole punching heavier sections the use of a handled tool is required. One will also find that the force required to punch a hole in larger sections will tend to bend the punch if it is too long. A shorter punch directs more force to the working end of the tool, making the work more efficient. The short tool uses less of an expensive material and eliminates the problem of bending when using a heavy blow. Complete and proper use of the punch and drift will be covered in a future lesson.

**Targets:** -The tapered sections of the punch should be straight, centered and without twist.  
-The faces of the taper should have no concav-

ity or convexity.

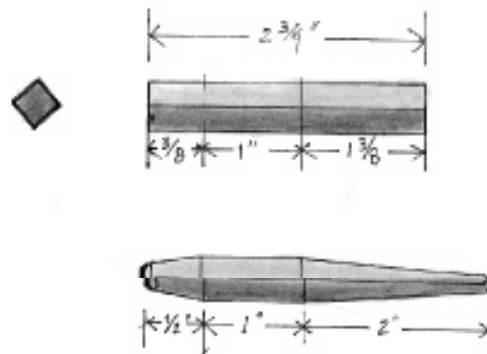
-The long taper of the punch should have sharp corners as should the end of the punch that will produce a hole. This will allow the material to be sheared out cleanly when producing a hole.

-The taper on the striking end of the drift should be easily made in two heats. The opposite end should be able to be finished in three to four heats, the final heat being used to smooth and accurately center the taper.

-The length of the taper on the striking end of the punch is 1".

-The length of the taper of the working end is 3".

-The final length of the entire punch should be 7-3/8" and the working end of the tool 5/16" square.



3. Starting stock size and finished dimensions of the punch.

## **Forging a Drift:**

### **Step 1**

#### **- Forging the Working End of the Drift:**

Following the same steps as when forging the punch, heat the end of the drift material to a yellow heat and forge a two-inch long taper using the face of the anvil, tapering from the parent stock size to 1/4" square, with the taper

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centered on the bar. 1-3/8 inches of 3/8" square material will be needed for this taper.

Note: The small end of the drift will need to be able to be placed in the hole produced by the punch. As before, if more than one heat is required, be careful not to burn the material as the reduced section will heat quickly. The taper should be even, centered and without twist. The long taper on this end of the drift, allows it to be easily driven into the hole being drifted. In actual use the end result will be a hole that has a nice bulge without the stock being reduced in thickness near the hole. Reduction in thickness near a punched hole is commonly referred to as "drag" and is affected by the taper of the end of the tool producing the effect. The shorter or more blunt the taper, the greater the drag. Alternatively, a longer and more gradual taper minimizes this effect.

## **Step 2**

### **- Forging the Striking End of the Drift:**

Follow the same directions for the working end. Important! The taper on the striking end must be longer than 3/8", the thickness of the material being drifted. Otherwise the drift cannot be driven through from one direction as it will get stuck in the hole being produced. A taper 1/2" long produced from 3/8" long of the starting stock will be correct for this tool.

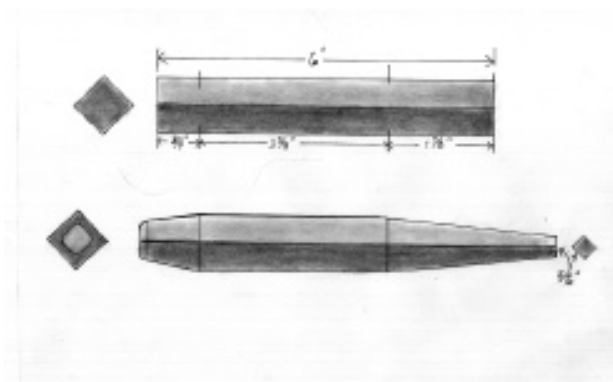
As the drift is intended to be used only on hot material, it is not necessary that it be made from anything other than mild steel. If forged carefully, little or no filing will be necessary. Quenching mild steel from an orange heat will stiffen the drift and provide better service.

**Note:** The drift forged in this example will result in a hole that is slightly less than 3/8" square when the workpiece cooled. This is due to shrinkage that occurs between the time the hole is drifted and the piece cools. If a 3/8" square bar is to pass through the hole, then the drift material would need to be upset slightly prior to Step 1. To accomplish this, take a yel-

low heat on the starting material, stand it on end (vertically) on the anvil, holding it from the side with a pair of tongs. Strike a few light blows on the end of the material to increase its cross-section. Usually when the material has moved sufficiently to cause the scale to fall off, it is upset enough to allow a bar to pass through the hole.

Targets:

- The tapered sections of the drift should be straight, centered and without twist.
- The faces of the taper should have no concavity or convexity.
- The long taper of the drift should have sharp corners but the end geometry is not critical as long as it extends through the 3/8" thick bar when inserted into the hole. The aim dimension for this end of the drift is 1/4" square.
- The taper on the striking end of the drift should be easily made in one heat. The opposite end should be able to be finished in two heats, the second heat being used to smooth and accurately center the taper.
- The final length of the drift should be 2-1/2 inches



3. Starting stock size and finished dimensions of the drift.



# New Jersey Blacksmiths Newsletter

## Setting Rivets

By Jim Carothers 12/19/17

I do most of my blacksmithing by myself; some simple tools lend a third and often needed hand.

Holding pieces tightly together for riveting has been a challenge for me. In these photos you will see how an end cut off a wrench has become a tool for helping to set rivets. The open end wrench used with a hold fast keeps the joint tight while I set the rivet.





# New Jersey Blacksmiths Newsletter



I learned how to make the holdfast by watching Peter Ross and Roy Underhill on the PBS series "the Woodwright's Shop". That video is season 37 and titled "Forging The Holdfast".

<http://www.pbs.org/video/forging-the-hold-fast-ut7ymw/>

(Photos by Jim Carothers)

From the newsletter of the;  
Saltfork Craftsmen Artist Blacksmith Association January 2018



## **Blinded By the Light**

**Be Careful How You Look**

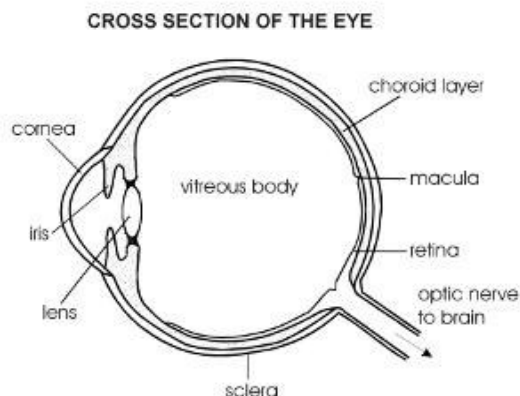
**Bob Dixon Gumm**

Shortly before the holidays, I was working on a welding project. The object that I was MIG welding had many prongs sticking out from it. While welding another prong, I noticed what appeared to be a weak weld. Lifting up my helmet, I poked my head in for a closer examination. What I failed to do was to move the MIG gun away from the project and rest it in the table holder. The outcome is easy to imagine. The gun was near my face, and as I got even closer to the weak spot, I accidentally pushed the trigger against one of the prongs. This was followed by a bright flash, a very warm feeling against my eyes, and a wait of about five minutes before I could resume welding. Once the bright spot in my eyes had gone away, I thought everything was fine. I worked for another hour, ate a meal, and sat in front of the television to see, 'How the Grinch Stole Christmas'.

It was soon after when I felt that I had a small grain of sand in my left eye. I lifted my eyelid back, hoping that tearing would remove the grain. My eyes cried a river, but the irritant only seemed to grow larger and the pain more intense. It wasn't long before my right eye began to express its outrage over my failure to secure the MIG gun. Convinced that I had a flash burn, I went to the urgent care clinic. They confirmed this, and provided antibiotic ointment and an ophthalmologist appointment. After about a week, my eye felt as good as new. I was lucky.

Most of us have heard of flash burn. But what exactly is it? Flash burn can be thought of as sunburn in the eye. If you imagine yourself lying on a beach, you know that there are greater things to worry about than being chomped on by a shark. Sunglasses, sunblock, that bird doo looking stuff that life-guards wear on their nose, and an umbrella all point to the greatest danger: sunlight. Sunlight is ultraviolet (UV) light, and UV risk comes to us in many different ways: sunlamps; nearby lightning flash; halogen lamps; reflection of sunlight off water and snow; and most important for us – any type of welding light, be it gas, SMAW, MIG, TIG, and forge. The latter causes are reason why the condition is known as 'welder's flash' or 'arc eye'.

A flash burn is a (painful) inflammation of the cornea. It produces a sensation similar to that of a corneal abrasion. But flash burn generally affects both eyes, though one eye usually is more irritated, whereas corneal abrasion takes usually occurs in one eye. The cornea is the clear tissue that covers the front of the eye. For our purposes, think of the cornea as the glass lens on the front of a camera. The cornea covers the iris (the colored part of the eye), focuses light on the retina, and protects deeper structures of the eye by acting like a windshield. Although the cornea is clear, it consists of cells that are similar to those in the skin. If you've ever had sunburn that resulted in blistered or peeling skin, then imagine the damage that UV light can do to your eyes.



Bad news.  
It hurts worse than it looks.

# New Jersey Blacksmiths Newsletter

What do you do when you receive a flash burn? The first step is to make arrangements to get to a doctor or care center. You should never attempt to drive yourself there. In the interim, flushing your eyes with water provides some pain relief. Once your eyes have been attended to by a doctor, you must be vigilant about applying prescribed antibiotic drops or ointment to your eyes. You may also wish to use OTC artificial tears, anti-inflammatory, and pain medications. Do not wear contact lenses and do not apply topical anesthetics. They will only prolong the condition. It is important to wear sunglasses whenever you're outside, and if the doctor determines that you need to wear a patch, ask for one of the black, pirate looking ones. They're rather dashing.

If you've followed doctor's orders carefully and have refrained from the activity that caused your flash burn, you can expect the cornea to repair itself within a few days, and all irritation or discomfort to end within a week. Typically, flash burn usually heals without leaving a scar. More severe cases may take longer. Like the time in my Navy days when our ship was in the shipyard. A young seaman who was having second thoughts about his enlistment was assigned as fire watch to a welding crew. While maintaining vigilance, it occurred to him that flash burn might just be his ticket out of the Navy. And so he stared at welding arcs. Instead of getting a pirate looking patch, as one expects for a sailor, the corpsmen taped big wads of cotton and gauze on top of his eyes. So rather than Blackbeard or Barnacle Bill, the poor guy looked like a human fly. Whenever he was led past shipmates who were standing around with nothing much to do, they would yell, "Help me!," and then bust out laughing. Far be it from the Navy to provide no opportunity for fun. Several of his bunkmates waited through the night, and when they were certain he was asleep, took magic markers and drew owl eyes on his bandages. The crew thought it was a hoot!

For blacksmiths and welders, we know that working with hot metal is fraught with danger. We all fear the black hot burn that leaves an impression on our fingers of the thing we just picked up. Skin, like eyes, is an organ, but an organ with the capacity to replenish itself and go on working as if nothing happened. What's a little scar among blacksmiths, right? It may get you bragging rights or a ! cup of coffee. The eye, unfortunately, is not so capable. A severe flash burn can produce scarring, and this can obstruct vision to some degree. If the flash burn is not treated, an infection may start. This is as serious a matter as getting a shard or miniscule piece of metal stuck in your eye. If infection sets in and goes untreated, the result may be partial vision loss or a blind eye.

Re-

- *Arc rays can injure eyes and burn skin*
- *The welding arc is brighter than the sun*
- *Precaution must be taken to protect your eyes and skin from UV radiation*
- *Wear correct eye and body protection*



# New Jersey Blacksmiths Newsletter

**PABA Membership Application**  
2018 (Jan. 1 - Dec. 31) \$25

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_\_

Telephone # \_\_\_\_\_

E-mail \_\_\_\_\_

Do you have any particular skills (welder, accountant, carpenter, doctor) that may be helpful to the group or membership? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please circle your skill level...

Beginner Intermediate Advanced Professional

*Note - Membership is per household.*

Make Checks payable to **PABA**.  
Send completed application and \$25 (one year) to: **PABA Treasurer - Barbara Plant**  
207 Lexington Road, Schwenksville, PA 19473

\_\_\_\_\_

**PABA USE** Cash \_\_\_\_\_ Check # \_\_\_\_\_

New Member \$25 \_\_\_\_\_ Renewal \$25 \_\_\_\_\_

New Member after June - June-Dec. price \$10 \_\_\_\_\_

## **Northeast Blacksmiths Association**

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

The Ashokan campus is located in

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

**Contact :** Tim Neu to register for hammer-ins or subscribe to the newsletter;

Tim Neu,

511 Beaverkill Rd.,

Olivebridge, N.Y. 12461

For more information check the web site;

**[www.northeastblacksmiths.org](http://www.northeastblacksmiths.org)**

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\_\_\_ Full Time Student \$45.00

\_\_\_ Foreign Member \$65.00

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New Jersey Blacksmith Association  
90 William Avenue  
Staten Island, New York, 10308  
Attn: Larry Brown, Editor



## How to Join or Renew your Membership in NJBA

NJBA Membership Dues are \$20 per year.

NJBA Business Membership Dues are \$40 per year.

Please make your check out to "NJBA" and mail it to

**NJBA, P.O. Box 224, Farmingdale, NJ 07727-9998**

Please include payment with the information listed below.

I want to join NJBA, and I am enclosing my check for \$20 (\$40 for a business) to cover annual membership dues and newsletter subscription. I understand and acknowledge that NJBA dues are credited from June to June, that I will receive for my first year's dues the current volume, and that dues will be payable again in June.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Cell Phone \_\_\_\_\_

E-Mail \_\_\_\_\_



### NJBA Volunteers List

☐ Please put my name on the list of potential volunteers:

**Availability:** ☐ Saturdays ☐ Sundays ☐ Weekdays

**Interests:** ☐ Demonstrating ☐ Coaching novices  
☐ Assisting at workshops

**Experience:** ☐ Novice ☐ Intermediate ☐ Experienced  
☐ Professional