

# N.J.B.A. Newsletter

NJBA Volume 21, Issue 1 10 Aug. 2017

*If you haven't paid  
your 2017-2018 dues,  
this may be  
your last issue!*

*Please use the ballot &  
renewal form on the back  
to vote and pay dues.*

## Upcoming Events

Remember most of our meets have an "Iron in the Hat" drawing, so be sure to bring a contribution. *More details on later pages.*

**Sun., Sep. 17. Red Mill Picnic.** Our annual picnic and tailgate sale at the Red Mill, Clinton, NJ. (See next newsletter for more details.)

**Oct or Nov? Anvil-Repair Workshop.** NJBA is planning to hold another anvil-repair workshop. See p. 3.

**Sunday, Dec. 3, Holiday Party.**

Hold the date. More details in next newsletter.

### 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/>.

### The Newsletter is at:

[njblacksmiths.org/archive/index.htm](http://njblacksmiths.org/archive/index.htm)  
or use the link on the NJBA web site for the newsletter.



# **New Jersey Blacksmiths Newsletter**

## NJBA Board of Directors

Directors are not listed on line

We like to thank those who joined  
NJBA as Business Members (\$40  
dues):

Marshall Bienstock



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## Anvil-repair Workshop

If we get enough interest, we will be holding another of our famous participatory anvil-repair workshops in October or November. The price per anvil will be \$150, but additional charges may be assessed, depending upon the size and condition of the anvil.

Contact Al Mottram at crankybellows [at] gmail [dot] com if you are interested. Please provide high resolution photos of your anvil edges, top, each side and bottom are also appreciated in order for our experts to evaluate the scope of work.

As for all NJBA workshops, this one is open only to adult NJBA members, but anyone can join when registering for the event.



## Report on the June 3 Picnic

The June 3 picnic was a partial success. It rained till about noon, but a fourteen intrepid folks showed up, despite the rain, to picnic and to try out our lightweight forges.

## Open Forge Meets

Adult NJBA members are welcome to attend our open forge meets. Adult nonmembers are invited to try your hands one time. NJBA requires you to join before continuing. The application form is on the last page of this newsletter.

### Monday Night Open Forge, Howell, NJ

Marshall Bienstock hosts an open forge meet every Monday evening at 7 PM, except major holidays. (Please call ahead on holidays to make sure: 732-221-3015.)

### 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



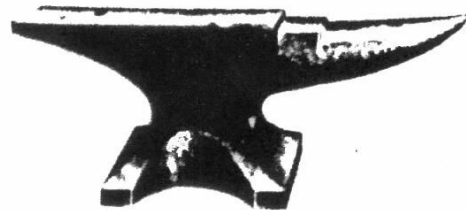
# New Jersey Blacksmiths Newsletter

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## Highlights of the NJBA Board Meeting

On Monday, July 31, 2017, six NJBA Directors met at Marshall Bienstock's shop for the NJBA Board meeting: Ryan Amos, Marshall Bienstock, Al Mottram, Larry Brown, Bruce Freeman, Ben Suhaka. The highlights of the meeting are reported below.

- Bruce reported that our coal supply is now adequate for upcoming demonstrations.
- The Board decided to reissue NJBA heavyweight pocket T-shirts in sizes ranging from medium to XXXL. The designs will be the anvil on the pocket and the leg vise on the back as we have used in the past. The color will be dark blue. A few of the directors will be looking into sourcing this order.
- Bruce reported that all the lightweight equipment is finished and ready to use and that the toolboxes are mostly complete.
- Al reported on his investigations of whether other ABANA affiliates admit minors to hands-on events: Some do, some don't.
  - ◊ The Board voted to retain the policy, implemented last December, of closing to minors all NJBA hands-on events, including attendance at open forge meetings, for reasons of liability,
  - ◊ NJBA will remain open to assisting youth groups (e.g., schools, scouts) who wish to sponsor such events, by providing our equipment and expertise at their venues, under their rules and their insurance.
- The Board election is in progress. Few renewals or ballots have been received so far. Bruce has sent an email reminder.
- Bruce reported that we expect coverage for all seven days of the Middlesex Co. Fair.
- Al reports no response yet to the announcement of the anvil-repair workshop, but it will remain in the calendar
  - ◊ If we hold this workshop, the date would be in Oct. or Nov.
  - ◊ Tentatively, the Board set the price to \$150, but with extra cost if special rod or wire is needed (as nickel prices have skyrocketed).
- Al read to the Board an email from Director Dan O'Sullivan with an idea for making anvils from heavyweight crane rail. (Dan has the rail.)
  - ◊ There was considerable interest in such a project. Marshall and Larry expressed willingness to do the oxygen cutting.
  - ◊ The Board raised several questions, and Bruce has since emailed Dan with these questions.
- Ryan reports that the paperwork is complete for a blacksmithing club at Princeton U., but no members have yet been recruited.
- The next Board meeting was set for Monday, Oct. 13, at 7:30 PM in Marshall's shop. NJBA members are welcome to attend Board meetings, especially if they have ideas for activities, etc.



**Anvil for sale**  
210 pound, "American,"  
\$550 obo.  
Contact Al Mottram,  
[amottram@gmail.com](mailto:amottram@gmail.com)

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## **The Old Millstone Forge by Ben Suhaka**

The Old Millstone Forge is believed to have been one of the oldest continuously operating blacksmith shops in the country up until the death of the last blacksmith, Mr. Edward Wyckoff, in 1959. The earliest deed that specifically mentions the transfer of the shop is dated May 29, 1837. There is indirect evidence that the shop, at the present location as early as 1768. A newspaper article dated March 28 describes the sale of a house, land, and blacksmith shop at the Somerset County Courthouse. At this time Millstone was called Somerset Courthouse and was the county seat of Somerset County. There is mention of a blacksmith shop in the area as early as 1691.

After Mr. Wyckoff died, the Old Millstone Forge Association was formed to acquire and maintain the shop. The building was restored from 1960 to 1966 and has been open to the public since then as a museum. The building is unusual in that it has two storeys; most blacksmith shops have only one storey. The lower storey is made of brick while the upper is of timber frame construction. Much of the brick and timber work dates to the early 1800's. The plank floor was added for the convenience of visitors and was not part of the original shop. Some years ago a grant was awarded to the shop for preservation and the wood floor was replaced with concrete.

Equipment on display on the ground floor of the shop show many years of the blacksmith trade. Open forge and bellows are typical of an early blacksmith shop. The hand cranked blower that is being used is a replacement for the bellows, it being easier to control and without leather to wear out. The anvils next to the forge are typical of the 18th century. On the floor nearby are two older and a rare big

anvil, which looks like an anchor and eight blocks shaped and anvil. The last two are believed to have been brought from Holland in the late 1600's. There are a number of tools in the shop, some fashioned by the Smith, some by machine shops.

Besides the hammers, of the basic tools are tongs to hold hot pieces, punches for making holes, and swages which are similar to patterns, and are used to in part various shapes to the work-piece. There are numerous pieces of large machines representing the trade of the 1900's. One such piece is a tire shrinker used to restore the iron tires used on wagon wheels. At one time wagon repair was an important component of blacksmithing.

The techniques on display at the museum are little changed from those used over the course of centuries. The hearth and the tools are the same type as traditional. And while some tools are modern, the brick forge is old. The only real change from colonial times would be the use of the hand crank blower instead of the leather bellows. The bellows there are original but are not in usable condition.

The museum is owned and operated by the Old Millstone Forge Association, which is entirely made up of volunteers. The Association pays the expenses for the museum and makes sure volunteers are on hand to run demonstrations on Sunday afternoon in season. The Association always welcomes new members. All funds for operating the museum come from visitor donations. The Association is a 501 C3 tax exempt organization, so your contributions are tax deductible. Donations can be made at the museum or check made out to Old Millstone Forge Association and can be mailed to Old Millstone Forge Association, North River Street, Somerset, NJ 08873.

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## Report on Union Forge Heritage Association's "Forged with Fire" Show by Ryan Amos

I arrived at the Solitude Heritage Museum at around 11AM on Saturday, May 20, and began setting up for the day. After 30 minutes of set-up, and 15 minutes of cookie raids, I got to work demonstrating.



The stock I had was far too large (around 6' length!), so first I demonstrated the process of hot cutting steel down to size. From there I began churning out nails. I also made a demonstration leaf, but the stem began to crack. Normally I would have scrapped it, but the attendees seemed interested in what goes wrong too. I continued to work the leaf to show how the crack spreads. I also made a replacement key for the vise, since the original was bent, untapered, and had fallen out.

We had many visitors to our tent, ranging from people who have never seen live forging before, to people who have been hammering before I built my first forge.

An hour or two into the demonstration, Tony Fresolone, NJBA member, dropped by to observe. Pretty soon, he was demonstrating some knife-making. Tony put out several knives in various states of completion for visitors to check out, and hammered out an



example knife. After he completed his knife, I gave one a swing too.

Before we knew it, 5 o'clock rolled around. I mentioned that our demonstrator for Walnford the following day had gotten sick, and Tony enthusiastically offered to take his place. We transferred the forging equipment to his hands as we packed up the station.

*[As I mentioned in the last newsletter, it was I who had got sick and couldn't make it to Walnford. Both I and the Walnford staff were very grateful that Tony stepped up and substituted for me. - Bruce Freeman]*



## Controlled Hand Forging Lesson 17

### Drawing Out

by Dan Nauman

Drawings by Tom Latané

#### Lesson #17: Forging a square bar into a round bar.

*Definition:* Reducing the cross-section of a bar  
*Intent:* The student will learn to take a bar with a square cross section, and forge it into a bar with a round cross section, maintaining a consistent diameter throughout the length of the bar.

*Tools:* Basic tools, 1/2" "V" tongs.

*Material:* 1/2" square x 6". (One half inch square x six inches.)

#### Step One

Heat 4" of the length of the bar to a bright yellow heat.

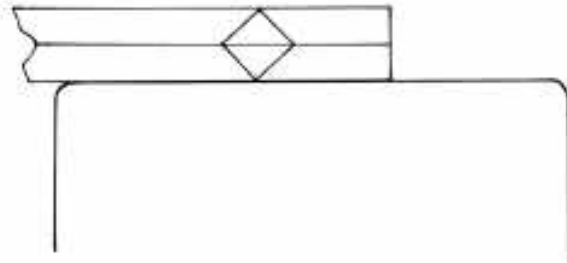
*Note:* Do not leave your tongs in the fire when heating the bar. Doing so could heat the tong jaws to a malleable temperature, and will cause the jaws to distort when pressure is applied by grasping the bar.

Your goal in this first step is to form the bar into an octagon.

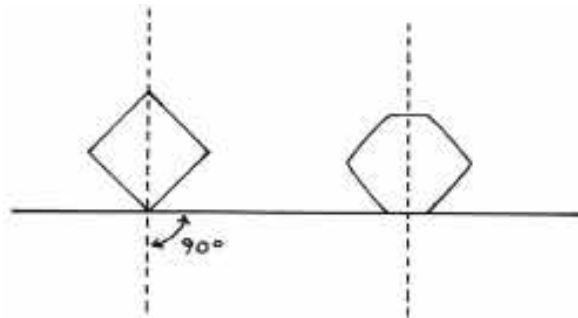
Place the hot end of the bar, with one corner level on the anvil face. Make sure the opposing corner is directly above; not leaning to the right or to the left. (See drawing #1.)

*Note:* This initial position of the bar is important, as you will be making the square bar into a perfect octagon before forging it round. If the corners of the bar are not positioned correctly on this first step, the bar will twist, and you will get more of an oval cross section than a round cross section later in the process.

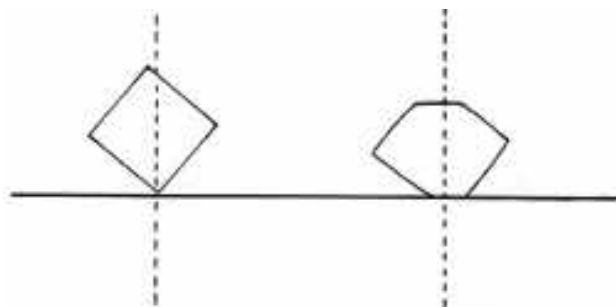
The end of the bar should be placed at the midpoint of the anvil face. Begin striking the end of the bar, with the hammer face parallel to the anvil's face. The facet you forge should be



1a. The bar on the diamond, held level with the anvil face, resting on one corner.



1b. When the bar is held correctly, with the line between the top and bottom corners perpendicular to the anvil face, the resulting facets will be centered on that line.



1c. If the bar is not held with the top and bottom corners lined up perpendicular to the anvil face, the first few hammer blows will cause the bar to twist and the resulting facets will be skewed.

about 3/16" - 7/32".

*Note:* Do not chase the bar with the hammer. In other words, after each blow, feed the bar forward about half the width of your hammer's face. The hammer blows should remain concentrated in the

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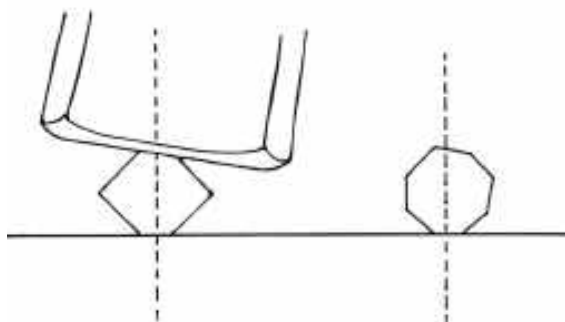
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same area of the anvil as your first blow. Since the position of the bar is moving, and the hammer direction is constant, you will find it easier to maintain control of the blows.

After each blow of the hammer, assess the impression to see if your hammer is maintaining a nice flat facet. If the previous blow shows a mark from the edge of your hammer, or a facet tendency to the right or to the left, adjust your hammer to make the correction. A proficient smith constantly assesses every blow, and adjusts the hammer head, the bar position, or both without breaking the rhythm of his/her blows.

Be attentive to maintain a constant material thickness along the length of the area you are forging.

*Note:* Right handed smiths will have a tendency to forge the facets with a lean to the right, and visa versa for left hand smiths. (See drawing #2.)



2. The result of the hammer blow tilted to one side.

Continue forging down the length of the heated bar. Then rotate the bar 90 degrees (right or left) to forge down another corner the full heated length of the bar. You have now forged four square corners of the square bar into facets.

*Forging dynamics:* The anvil is also flattening the opposing corner. Note that the width of that facet will be narrower, and will need to be dressed with the hammer.

The metal itself is acting as a shock absorber. The more stock between the anvil

and hammer, the less force applied by the anvil. Also, the original four facets will begin to slightly bulge. (See drawing #3.) This is caused by the force of the hammer blows, and since the bottom of the bar is supported by the anvil, the metal will seek the path of least resistance. These facets will need to be lightly dressed with the hammer to have eight uniform and flat facets.



3. The remnants of the four original faces of the bar are shown bulged by the displacement of the metal as the corners are forged.

These dynamics will be more apparent when working larger bar stock. The 1/2" bar that you are forging in this lesson may show little visible difference in facet width or bulging.

Rotate the bar 90 degrees in the same direction as you did earlier. This facet was forged by the anvil face, and will need to be lightly dressed, as will the next successive facet at 90 degrees.

As you are forging these facets, be aware of the width of the original four facets, as they are now becoming narrower, and have slightly bulged. The heat in the bar has diminished by this point. If the bar still has some dull orange color, begin to dress the all facets to a uniform width, with lighter blows. If the bar is more red than orange, reheat to a medium orange, and dress all the facets.

*Note:* Do not make the mistake of trying to dress the facets at a high heat. The facets of the bar are difficult to see when the bar is heated brighter than a medium orange. If the bar is forged, even though the facets cannot be readily seen, the result is a bar with mis-aligned facets, twisted facets, or corners



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that have been nicked.

As the bar cools, and the facets and their respective corners are becoming uniform, lighter blows may be used to smooth the eight facets, and to sharpen the eight corners. This is often referred to as a “finishing heat.”

## Step Two

Turn the bar around, and heat four inches to a bright yellow heat. You will be heating the bar partially into where you have already forged. You do this so that the area you wish to forge remains hot enough to forge the rest of the bar into an octagon.

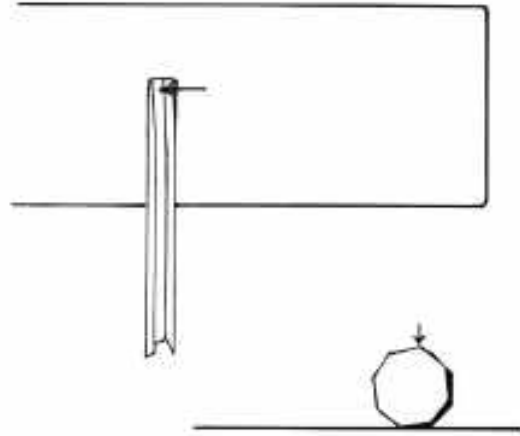
Proceed to forge the end of the bar as in step one, and gradually work towards the middle of the bar until the facets blend into one another. Be careful to maintain the bar level on the anvil, and to keep your hammer blows parallel to the anvil face.

*Note:* It is at this point you will find out if you have a tendency to forge with your hammer head to the right or to the left. When you forge the facet on the opposing side of the bar, the facets should meet on the same plane. If there appears to be a twist at the point where your facets meet, you are probably not forging with the hammer head parallel to the anvil face, or you are not holding the square corners of the bar perpendicular to the anvil face. The correction is a delicate matter. With lighter blows, dress the errant facet to the correct plane by altering the position of your hammer before proceeding to forge the succeeding facets.

If there is a constant twist throughout the bar, again this is a result of a right or left forging tendency. It could also indicate that you are holding the bar with the corners out of a vertical line. This twist is difficult to correct.

To correct a slight twist, reheat the twisted bar to a medium orange. Place a facet flat on the anvil face, with the middle of the bar at the

near side of the anvil. (See drawing #4.) With light blows, strike the far end of the bar with the hammer face parallel to the anvil face.



*4. Correction of a slight twist may be accomplished by light flat hammer blows to the high corner at the end of the bar while the middle of the bar rests with a facet flat on the near side of the anvil.*

Proceed with your blows to the middle of the bar. Repeat this on all eight facets, or until the twist has been removed. Turn the bar around and repeat if necessary. The danger in this corrective action is that the bar’s cross-section may be reduced undersize, and could require upsetting to regain the proper thickness. A radically twisted bar (more than 1/8 revolution) or more than likely will prove impossible to correct in this manner.

Of course, the bar could be heated to a dull orange, then placed in the vise and twisted to remove the twist. It is the aim of these lessons to teach the student to use the basic tools to increase hammer control, and less reliance on peripheral tools. The best way to avoid the twist is to be careful and forge square to the anvil, and also to hold the steel in the proper position.

## Step Three

You should now have a uniform octagon.

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Check the bar thickness on all sides with an outside caliper. The facets should all be uniform in width, and the corners sharp.

The bar should also be straight. Check with a straight edge. The bar should also be 6 5/8" long, and the width across the facets between 17/32" to 9/16".

*Forging Dynamics:* Note that the cross section of the bar appears to have grown in size. The measurement across the diamond of the parent square bar is just under 11/16". What has happened is that the metal in the corners has been redistributed by forging, and in actuality, the cross section has been reduced, and the length of the bar has increased.

You may also find that the ends of the bar are thinner than in the middle. This is because there is less resistance at the ends of the bar, so the bar stretches easier at these points.

If your bar's ends are thinner, you will need to upset them and redress the facets to obtain a uniform cross section.

## Step Four

You are now ready to forge the bar into a round cross section. The bar is longer as you have drawn out the bar to make the octagon. Heat four inches of the bar to a medium orange. Place the end of the bar in the middle of the anvil face with the bar lying level on one corner. With quick light blows, proceed to forge down the length of the hot bar as you did in Step One. Rapidly repeat on all corners. (See drawing #5)

When you have knocked all the corners down, place the end of the bar back at the center of the anvil, and begin to rock the bar back and forth 180 degrees. Then with light rapid blows, begin to refine the bar into a round cross section. Your goal in this step is to erase any sharp edges and facets. Aim the hammer at any sharp edges that remain on the bar. If you continually strike the facets, they



5. Sixteen rough facets are created by forging the eight corners of the octagon. Light rapid blows are then directed at the high spots while the bar is rolled back and forth. Continually rolling in one direction can cause a twist in the bar.

will increase in width and the bar will not be forged to round. Work the bar about one width of the hammer's face until the bar is round (no facets or sharp edges.) Then feed the bar forward, and repeat the process, consecutively working only the width of the hammer's face at a time. Reheat to medium orange if necessary to complete this side of the bar. Rotate the bar to the radius that faced the anvil, and proceed with the rocking motion and continue refining to round.

*Note:* Working the bar in hammer face width segments makes it easier to maintain a uniform diameter.

You may work the bar to a black heat (finishing heat) to refine the bar, but do so only with very light rapid taps, and only if the major facets and edges have been removed.

*Forging dynamics:* The black heat is a brittle heat, and cannot take the abuse of a heavy blow. Heavier blows at a black heat will result in cracking, splitting, or snapping.

## Step 5

Turn the bar around, and repeat the process as in Step 4.

*Targets* –The bar should be straight.

–The bar should have no facets or edges.

–The bar should have a uniform 7/32-9/16 diameter throughout its length.

–The bar should be 6 3/4 inches long, plus or minus 1/16".