N.J.B.A. Newsletter

NJBA Volume 21, Issue 4

Upcoming Events

Many of our meets feature an "Iron in the Hat" drawing (fund raiser), so be sure to bring a contribution and cash to buy tickets. Tailgate sales are permitted at many of our events. See p. 2 for Directors' contact information.

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

NJBA has been again invited to demonstrate at the fair. *Volunteers may still be needed to demonstrate to the public from 5-9 PM all seven days. Contact NJBA Director Damian Toryak if you'd like to participate.* General questions should be directed to NJBA Director Bruce Freeman.

August 19, Red Mill Picnic and Tailgate Sale

See announcement on this page.

Sat., Sep. 15. Days of the Past Engine Show

Former NJBA Director John Chobrda has been demonstrating at this show for a dozen years or so. He will be there with his blacksmithing trailer on Sat., Sep. 15. Others are welcome to join him.

Sat., Oct. 13 Princeton U. Open Forge Meet

See "Volunteer Opportunities" on page 4 of this Newsletter.

Autumn Workshops (Dates TBD)

NJBA Director and professional swordsmith and knifemaker Mark Morrow plans to hold three workshops this coming autumn, a **tong-making workshop**, a **trade-axe-making workshop**, and a **steel-smelting workshop**. Schedule is not yet available. Please email Mark (See p.2) for further information.

If your address label indicates that your membership expired on or before June, 2018, then THIS WILL BE YOUR LAST ISSUE !!!

To renew your membership, please use the ballot and renewal form on the last page of this issue.

When sending in your renewal, please also vote for the NJBA Board of Directors. If you have previously paid your dues (i.e., your label says your dues are payable on or after June, 2019) you can submit your ballot without any additional payment.

August, 2018

The Picnic and Tailgate Sale at the Red Mill is Sunday, Aug. 19

Please plan to attend. Bring all your old stuff for the tailgate sale! Please bring a contribution to the Iron-in-the-Hat fundraiser for NJBA. Please bring money to buy IITH tickets and tailgated items. The picnic is free to NJBA members & families, but contributions to helpoffset expenses are much appreciated. Admission to Red Mill Museum and Grounds if free to NJBA Members, and tailgaters may park on the grounds, inside the gate.

NJBA Board of Directors

Ryan Amos

William Barrett

Marshall Bienstock

Larry Brown

Eric Cuper

David Ennis

Bruce Freeman

Tony Fresolone

Ron Jani

Tom Majewski

Mark Morrow

Al Mottram

Bruce Ringier

Thomas SantomauroBen Suhaka

Damian Toryak

Directors' contact information provided only in print version.

Coal

NJBA will soon be purchasing a number of tons of bulk coal of good analysis. In addition to using this coal for our demonstrations and open forge meets, it will be available to NJBA members at $10 per (nominal 50-lb) bag, on a bring-your-own-bag and bag-it-yourself basis. (Plastic bags of 6-mil thickness are recommended.)

Your Help Requested for the Newsletter

You can help your editors put together a better newsletter by submitting your contributions of blacksmithing-related materials such as reports of meetings you attend (NJBA and others); shop tips; book reviews; "how to" articles; descriptions, including sketches, of shop-made tools; lists of upcoming blacksmithing events and classes. Feel free to send all such materials to NJBA Director and Newsletter co-editor, Bruce Freeman.

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

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 the above prices 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.

If you wish to order them by mail, a postage and handling charge of $10 for one sweatshirt or up to two T-shirts. For further information, contact NJBA Director Bruce Freeman.

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.

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.) **Contributions to Offset Expenses:** Those of you attending Marshall's open forge meet will soon see a contribution can. Contributions of $1-$2 are suggested and may be deposited in the can at your convenience. This will be by the honor system. If you're short the cash one evening, feel free to make it up the next.

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

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

Marshall Bienstock

Eric Cuper

Volunteers Are *Always* Needed

NJBA is a volunteer-run organization. To continue to function and to deliver the benefits you have become used to, we need members to step up to help out. Mostly, the help we need is in demonstrating to the public and in running meetings or workshops.

If a member becomes a regular, reliable contributor, we can elect him to the NJBA Board of Directors if he wants to have a voice in the operation of the organization. (See "NJBA Bylaws" at njblacksmiths.org.)

Volunteer Opportunities:

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

A few more volunteers would be welcome to help man our booth and demonstrate blacksmithing to the public from 5-9 PM all seven days. Contact NJBA Director Damian Toryak if you'd like to participate.

- **Saturday, Oct. 13. Autumn Open Forge Meet at Princeton University.**

If you'd like to help out, seeting up and breaking down the equipment, maintaining the coal fires, and doing brief demonstrations to novices, contact NJBA Director Ryan Amos.

- If you would like to put yourself on a list of members to be contacted when we need assistance, please complete and return the volunteer form (and ballot and membership renewal) on last page of this newsletter.)

The Lord Stirling 1770s Festival
October 7, 2018 - 11:30am - 4:30pm

Each year on the first Sunday in October, Lord Stirling's estate at Lord Stirling Park in Basking Ridge comes back to life in the late 1700s. Colonial craftspeople ply their trades, a town crier delivers the daily news, and Revolutionary War military detachments camp and conduct maneuvers on the former estate lawn.

Nearly 50 people attired in replicas of 1770s clothing participate in the festival demonstrating their trades and crafts (no crafts are sold). These crafts people make articles such as buttons, rifles, brooms, furniture, lace, stained glass, red-ware pottery, and powder horns. Other trades and crafts include a **blacksmith**, tinsmith, wool spinning, decoy carving, and colonial herbs.

Suggested donation: $5

www.historicalsocietyofsomersethills.org/event_lord_stirling_festival.php

Index to NJBA Newsletter Archive
by Bruce Freeman

On pages 15 & 16 of this issue is an index to volumes 1 through 3 of the NJBA Newsletter. This two-page index is included only as a teaser for things to come. Indexing these newsletters is an ongoing project, and so far I've addressed the first 11 volumes , but only the first three volumes are included for lack of space.

The three-volume index, arranged by Category and Topic take up two pages of this newsletter. Yet for a printed version to be fully useful, it must also be arranged in four or five other ways (such as by author or by demonstrator), each of which would consume an additional two pages. And were I to include the eleven volumes so far indexed, this would run to well over 30 pages.

This index is not exhaustive, and never will be. Announcements of upcoming events or classes, lists of Directors, advertisements, obituaries, etc. are *not included at all*. This is because, the purpose of this index is to help the reader find materials in the NJBA Newsletter Archive (at NJBlacksmiths.org) that are useful *today*.

Accordingly, this index will not be published on paper. Rather, it is my intention to post it online, preferably in a manner that will permit searching for subjects or names. This objective is probably a few months in the future, but will be announced here when achieved.

In the meantime, I suggest you try using this paper copy to find articles in the first three volumes that may be of interest to you.

Report on the First Princeton University Summer Open Forge Meet
by Lincoln Wolfe

This was my first time helping out at an NJBA teaching/demo event. It was at Bowen Hall on Princeton University Campus. We lucked out with

the weather Saturday, the temperature dropped into the 70's, as opposed to the 90's we'd been having.

By the time I arrived, there were already a half dozen people scurrying around unloading the rental van under Bruce's direction; and starting to pop up the canopies.

I didn't know what to expect as far as what the set-up would be like. In fact, there are 6 very well thought out modular forging stations, each color coded with a matching color tool box and tools. Bruce's design and build I think, works well!

Lunch was provided; we finished setting up and lighting the forges while the student attendees hung out and had theirs. We grabbed a sandwich, the students queued up and we were off.

Dave brought over Angela, a Physics student, to my Yellow forging station and we got started. I showed her putting a square point on some 3/8" bar and it was her turn. She cranked the blower and got her hammer in hand. I'm not sure she'd held a hammer much, so I coached a bit. After a few heats and not much metal moving, I suggested she think of something that made her angry, soon she was wailing on the bar stock and did get it moving. She drew a point, and a flared tip and then curled it. I taught her how to use the leg vise and twisting wrench and she finished her first forging experience, all smiles.

The next pupil was Heather, a definite Engineering student. She had held a hammer before and had plenty of mechanical aptitude. Not much explaining needed, just show and go. I drew the square point, she quickly did the same. I asked her what she wanted to work on. Each attendee seemed to come prepared, having done some research or just thinking about what they would like to try to make. Heather wanted to make a large hook with a couple twists. I gave her some pointers on using the leg vise and she quickly completed the first twist. To get a second twist close in the opposite direction, she made it vertically walking around the vise.

Another anvil appeared from the Engineering School and I was introduced to Ethan. Now I had 2 at the forge. Ethan is also an Engineering student and wanted to make a scroll inspired by a musical G Clef. After finishing the regular square point exercise, I suggested he use the round stock to form his bar stock, then form the scroll. After flattening the round into a thinner flat stock, he started working the scroll on the anvil and horn. We also put the bending fork in the leg vise for him to use on finessing the shape.

And then surprisingly it was already 3pm! Where did the time go? Seemed like the students would have just kept on going, but we did get enough done for them to have a taste of blacksmithing. Success!

I really enjoyed seeing the interest and enthusiasm of the group that came to try out forging. The enthusiasm of students is energizing. I think they had a great time, and I did, too.

Thanks Bruce, Ryan and NJBA!

Report on the First Princeton University Summer Open Forge Meet

by Bruce Freeman

NJBA Director Ryan Amos and Dan Steinberg, Educational Outreach Director for Material Science, rented a van and picked up the NJBA lightweight equipment a few days before the event. When I arrived, the van was parked beside Bowen Hall, and with the aid of a number of volunteers, we moved it to the site and started setting up all six forges. We were able to start the forge fires by about 11 AM, and soon thereafter invited the Princeton students to try their hands at forging. Lincoln Wolfe has given an excellent account of the day.

I'd like to thank our volunteers -- Ryan Amos, Tony Fresolone, Lincoln Wolf, Mike Alfano, and Julienne LaChance --for helping with this event.

Report on the 2018 ABANA Conference

by Bruce Freeman

ABANA conferences bring together smiths from across the country. One can meet folks from other regions, renew old acquaintances, and meet the ABANA Board members. One gets to see a gallery of excellent artistic work, and shop from tailgaters and commercial vendors selling books and equipment, sometimes at special "conference" discounts. In addition, ABANA conferences attract many renowned smiths, such as Peter Ross, with whom I had the pleasure of chatting a few times across the week, and also with Glenn Horr, who

introduced me (at an NBA meet) to the use of a hand-held air hammer in blacksmithing.

Although I don't know the official figure, attendance seemed down relative to the Dover conference in 2014, and I'm fairly sure the tailgaters were also fewer. By contrast, there seemed to be more commercial vendors (indoors and out) than I recall from the Dover conference. Some of these were Farrier suppliers, showing off tools, heavy leather aprons, and brands of anvils I'd not previously seen. (Their new anvils, however, are quite pricey.) There were at least three commercial vendors of books, offering a wide range of subjects, mostly metal related but not all. (Nol Putnum pointed out that "books are tools" and it is wise to spend money on them. However, I already have a collection of perhaps 300 volumes related to metal and metalwork, so am quite stingy at this point about purchasing more.)

The biggest difficulty at this conference was that the daily schedule had omitted any subjects or titles from most of the demonstration and lecture announcements. This boded ill, and indeed proved a significant problem in choosing how to spend my time. I found myself wandering from place to place, seeking demonstrations that would address my specific interests. (This difficulty was possibly greater for me than for some others, since I had some specific interests I wanted to see addressed, including traditional joinery techniques, toolmaking, and the forging of practical items such as candelabra and possibly furniture, and I am not particularly interested in pure art, or large abstract sculptural pieces, of which there were a number of examples at this conference.)

The conference itself seemed quite ably run. Air compressors were central to the demo tents and remote enough from them that their noise did not distract from the talk. The set-up crew seemed on top of most problems, but there were some significant hitches, e.g., PA systems were not functional at all the tents for no obvious reason. Mark Aspery's tool-making demo attracted a crowd too large for the demonstration tent, which was half the size, and had half the bleacher space, of most other tents

Wednesday evening, I attended the reception at Gallery Flux in Ashland. In coordination with the ABANA Conference, this art gallery was displaying a juried show of varied metal works, including sculptures, art objects, jewelry and bladesmithing. NJBA Director Mark Morrow had the honor of having three of his works accepted -- a bowie knife, an axe and a cutlass -- and was apparently the only bladesmith represented in the show.

Saturday I attended the Affiliates Meeting, in the morning. Topics of interest to me included:

Questionnaire from ABANA to affiliates. (I never saw it.)

Insurance. I mentioned our problem with Travelers.

Demonstrators' List. No longer exists. Leigh suggested looking at the list of instructors at blacksmith schools. I pointed out that this did not give us any idea of costs. Leigh suggested $1000 fee and $1000 travel and lodging.

ABANA membership within affiliates. Leigh says that only 10% of the membership of the affiliates are also ABANA members. How to increase? I suggested making the publications available by subscription, but Leigh pooh-poohed the idea and I never got to elaborate.

How to communicate with the ABANA Board. I have had trouble with this recently. Leigh says emails are forwarded to him from the central office, but somewhere or other the ball seems to get dropped, and I am not inclined to nag ABANA Board members who choose not to respond to my emails.

Coal. Somebody mentioned the Keystone Mine in PA (but I haven't found anything on line about their selling blacksmiths coal). Leigh mentioned Integrity Coal on Long Island, and I've since contacted them but found they deal only with very large orders.

A couple tips and things I "brought home" from the conference:

Susan Hutchinson used 3% H_2O_2, acidified with a few drops muriatic acid, to develop a brown patina on steel -- after wirebrushing to remove scale. She then used a flat spray varnish to stabilize the patina.

Chris Shea used a textured hammer to obliterate file marks on a piece, and someone contribut-

ed that they could be removed using knotted 25-gauge-wire wheel, leaving a surface that looks hammered.

Kim Thomas gave an excellent slide show of his restoration of Samuel Yellin gates.

Chris Shea gave an interesting demonstration of a candle holder with square candle cups.

Michel Dillon gave a demonstration of a leaf made from a diamond-shaped blank.

The inevitable problem of ABANA conferences persisted in this one: With a dozen events (demonstrations and lectures, as well as open forges and family programs) running simultaneously, the best one can hope for is to attend a small fraction of what the conference has to offer. Furthermore, the cost of attending in travel and lodging expenses, and especially in vacation time, is far higher for ABANA conferences than for local events.

It was this problem that caused me to conclude, 20 years ago, that one's time and money might better be spent attending closer, smaller events. At such meets there are rarely even two simultaneous demonstrations, so there's little competition for one's attention. I adhered to this policy between the '98 conference in Asheville, NC, and the '14 conference in Dover, DE.

I am more committed now to attend ABANA events on the East Coast because, being retired, it doesn't cost me precious vacation time.

Dealing with a Coal Fire

by Bud Oggier [with comments by Bruce Freeman]

"Each day, when I'm done here at the forge, I separate the green coal from the coke, put the coke over here at the side of the forge, and clean out the firepot completely. I like to start out the day with a new fire that I know has no ash or cold clinker in it."

[At the end of the day's work, what is actually within the firepot is usually coke, clinker and ash. What works well for me is to carefully rake the coke and coal off the top, sift the ash through the tuyere, then drag the clinker out front where it can be disposed of when it cools. -BF]

"To start a fire I use three full sheets of newsprint wrapped up in a ball, light the tag end, hold it in the chimney hole for a few seconds to start the draft, drop it in the firepot, add some small coke from my reserve pile, and turn on the blower enough to make it burn briskly."

[If you lack coke, use wood kindling instead. -BF]

"Put on more coke as soon as the fire is burning well. Build up a pile about three or four inches above the firepot. Now, add green coal to both the sides and back. Don't be stingy. You don't burn coal in the fire but convert it to coke by heating it on the sides of the fire and driving the gasses out of it. Coke burns much hotter than coal. Coke is what you burn."

[And the novice should soon learn not to add the coal to the top of the fire, as that will smoke like mad. If a forge fire does start to smoke, use your poker to poke through to the tuyere, and then give the blower a few good cranks to blast a flame up through the middle. The flame will ignite the smoke, clearing the air.]

An NJBA "Forge Council"?

Recently one member has expressed an interest in having "subchapters" of NJBA. Although the Board is taking no action on this matter at this time, it is reminiscent of a proposal I made about 15 years ago that would accomplish much the same thing: Local "forges" with some level of autonomy, but within NJBA and benefitting from the NJBA Newsletter and insurance coverage. No action was ever taken on this idea, which would necessitate amending our Bylaws. If any members find such an idea attractive, we will have an opportunity to discuss it at the upcoming Red Mill meet.

Princeton University Blacksmithing Club

NJBA Director and Princeton graduate student, Ryan Amos, reports significant progress in forming a blacksmithing club at Princeton University. Ryan coordinated the summer open forge meet and will be coordinating the upcoming autumn open forge meet, which are held at Bowen Hall of Princeton University by NJBA volunteers, using the NJBA lightweight forging stations.

ABANA's "Bulk Membership" Program.

NJBA may soon participate in ABANA's bulk membership program. See ABANA.org

Controlled Hand Forging 23

Drawing Out Round Stock to Square

Lesson 23
by Bob Fredell
Drawings by Brian Gilbert and Tom Latané
Minneapolis, Minnesota

Introduction: The student should be able to correctly draw out a square bar before attempting this lesson. Drawing round to square is more difficult than drawing square to square because of the added difficulty to register an exact 90º rotation.

Intent: This lesson is designed to teach the student:

(1) How to accurately rotate the bar 90º;
(2) To develop hand-eye coordination in the rotation process;
(3) To gain a feel for the hit-and-rotate rhythm. This will result in smooth and efficient drawing-out. This lesson uses round stock because it eliminates the initial guidance of the flat side of square stock on the anvil, thereby requiring the student to develop the three goals stated above.

To accomplish this goal, the student will forge a 5/8"x 24" round bar to square having 7/16" sides.

Material: Mild steel round bar, 5/8"x 24", square bar 1/2"x about 24".

Tools: Anvil, hammer, outside calipers, straightedge, tongs for 7/16" square.

Step One

This step is practice to get the feel of how much to rotate the wrist to turn the bar 90º. Hold the cold square bar flat on the anvil and rotate it 90º from one flat side to the next. Be aware of the amount of wrist rotation as the sides of the bar make contact with the anvil and observe the position of the sides of the bar in relation to the anvil. This process will aid the student in becoming confident developing the rhythm of making 90º rotations.

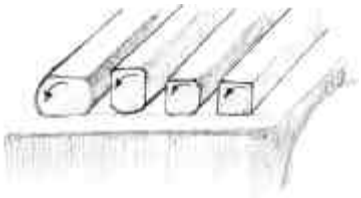
Drawing 1

Step #2.

Heat 5" of the bar to a yellow heat and place it flat on the face of the anvil. It is always good to properly heat a slightly longer section than is to be forged. Starting at the end of the bar, strike a series of 4 or 5 overlapping blows to a length of 4". Be sure to critically observe the result of each hammer blow as you are forging the bar. This will enable you to make corrections of incorrect rotation and incorrect angle of the hammer during the forging process.

Drawing 2

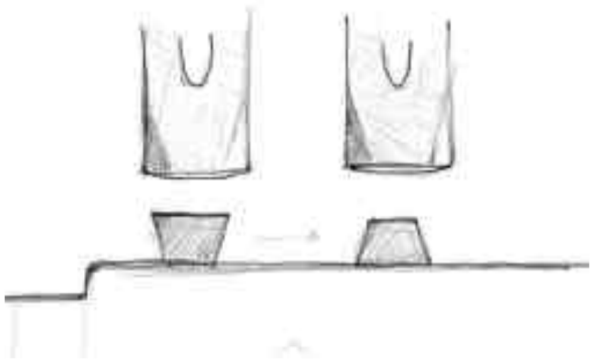
Next, rotate 90º. Draw out the top-facing side of the 4" section as described above. The 4" section is now becoming square. Then, rotate 90º in the same direction. The first side that was worked is now flat on the anvil. Draw out the 4" section as described above.



Drawing 4

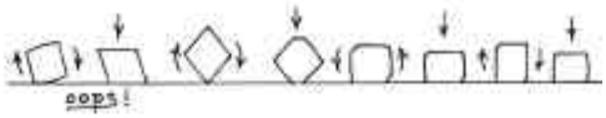
Again, rotate 90º in the same direction. Draw out the 4" as described above.
Note: The entire process will take several heats. Stop forging when the temperature drops to a dark orange heat even if the bar is not fully reduced, as the mild steel does not easily move with lower heat. Reheat and continue drawing out, as described above, until the sides are 7/16". Crisp corners can be made by using a lower heat and lighter hammer blows when making the final adjustment to size. Initially you may need to use the calipers to measure. With practice your eye will be a fairly good judge of the correct size. It is important to establish well-defined sides and crisp 90º corners. Straighten the bar with light blows as necessary.
This is not a contest with yourself to see how much work you can do in one heat. Focus on 90º rotation, rhythm of rotation and accuracy of blows. The hammer blows should be only as fast as you can control the hammer. Speed will come later.

Forging Dynamics:
When forging the bar, light blows and a low heat may result in the side of the bar being struck by the hammer to be drawn out more than the side facing the anvil, resulting in the hammer side being wider than the anvil side. The correction for this problem is to place the wide side (the side formerly struck by the hammer) down on the anvil and strike. Rotate the bar so the second wide side faces the anvil and strike. Continue to draw out as described above. It is necessary to work all four sides of the bar to achieve a uniform result.



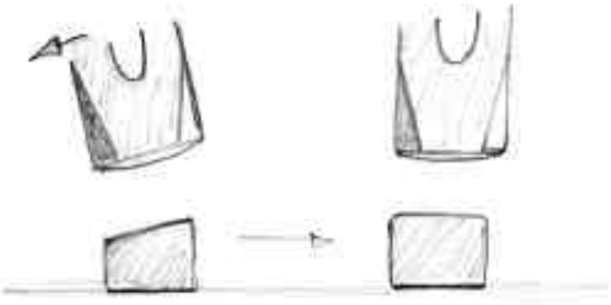
Drawing 4

Note: If the rotation is more or less than 90º, a parallelogram will result. Stop as soon as you see this developing and make corrections. Correct by hitting the corner of the long diagonal; then return to forging the flats of the bar. The sooner you catch this error the easier you may correct it. This is because as you approach your target size, you will not be able to eliminate the facets made by this correction without further reduction of the bar. This would then result in a cross-section smaller than desired.



Drawing 5

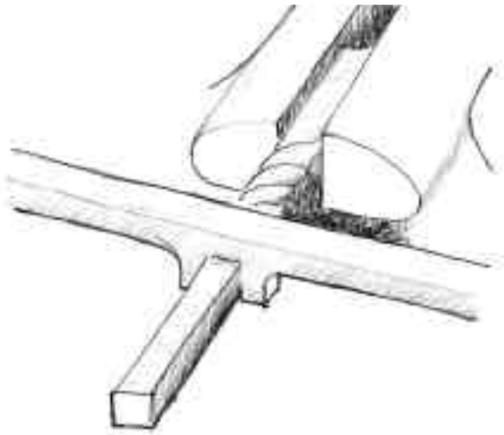
Note: If the opposite faces of the forging are not parallel, it is because the hammer has not been landing parallel to the face of the anvil. Stop as soon as you see this happening and make corrections by making sure that the hammer face is parallel to the anvil.



Drawing 6

Step #3.
Be sure the square portion is straight, square, and is the correct size before working the next

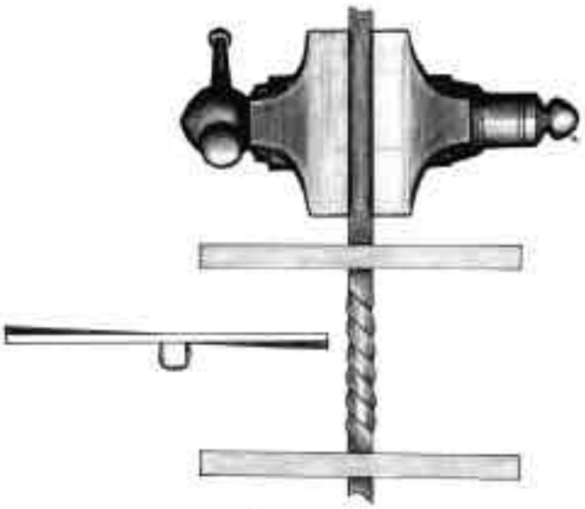
round portion. Errors are always more easily corrected early on in the process.
Heat the next five inches and draw it out four more inches, as described in Step #2. The square portion will now grow to eight inches. Continue this process until you can no longer comfortably hold the round bar. Then, hold the square end with tongs and continue to draw out the entire length of the round bar as described above.
Note: As the square section becomes longer a twist may develop, caused by incorrect rotation and hammer angle. Should this occur, heat the twisted section to a red heat, place the end in the vise and reverse-twist with tongs or twisting wrench. Finish at a low heat on the anvil with light hammer blows.

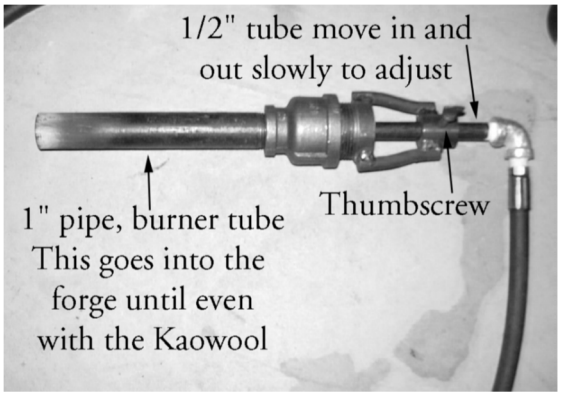


Drawing 7

Note: An easy way to see a twist is to place the bar horizontally in a vise. Then place a series of 3 to 5 flat bars (say 3/16" x 3/4" x 4") on the bar, and sight down the length of the bar. The flat bars will dramatically show where the twist is. The beginning blacksmith who is not familiar with strike-and turn rhythm may need to make several, or even multiple tries of this lesson. Don't be discouraged; focus on your rotation and hammer angle. Get the feel of the rhythm.

Targets:
1. The corners are 90º measured with a square.
2. The sides are 7/16" measured with calipers.
3. The corners are sharp with no visible facets.
4. The bar is straight as checked with a straightedge.
5. The surface smooth as checked with the straightedge.
6. An additional way to determine how closely you met the first five targets is to measure the final length of the now-square bar. The mathematically derived length of the bar is 38 1/2". The closer you met the first five targets, the closer your bar will be to 38 1/2". A slight loss of material results from scale.





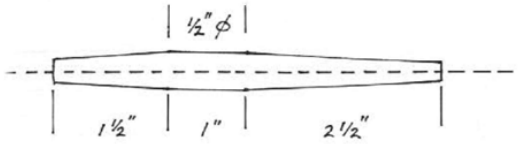
Gas-Forge Burner Designed by Marshall Bienstock

Controlled Hand Forging Lesson 24

Making a Round Drift

By Dan Nauman
Drawings by Tom Latane
Minneapolis, Minnesota
Lesson#24.

Unit: Drawing Down
Definition: Reducing the cross-section of a bar.
Intent: The student will learn how to make and control two round tapers from a round parent bar by making a round drift.
Tools: Basic forging tools, 1/2"V-tongs, (or 1/2" bolt tongs), 3/8"V-tongs, (or 3/8" bolt tongs).
Material: 1/2" x 31/2" round stock
Drift definition: A drift is a tapered tool for enlarging, tapering, or dressing a hole, to a desired size. Its shape is dependent on the procedure. Some examples of drifts are:
1.) A round or square-bodied drift used to size an existing hole to a specific diameter/ width throughout the length of the hole. In this case, the drift will have two tapered ends, so when the major diameter/ width of the drift has sized the hole, the drift can easily exit the hole. The length of the driving taper (or trailing taper) should be longer than the thickness of the bar so that the drift does not get stuck. The driving taper also allows for the inevitable mushrooming that will occur from repeated hammer blows.
2.) A drift for a pickeye is tapered on one end only, and is not driven through the hole. This leaves an evenly tapered eye.
3.) A drift for a hammer-head eye is also tapered on one end only. However, in this case, the drift is driven from both sides to create an hourglass shaped hole
4.) Yet another drift is used as an anvil. Once inserted into the bar, it allows the sides of the bar to be forged without collapsing the hole, i.e., the hole in a latch handle that receives the thumb-piece.

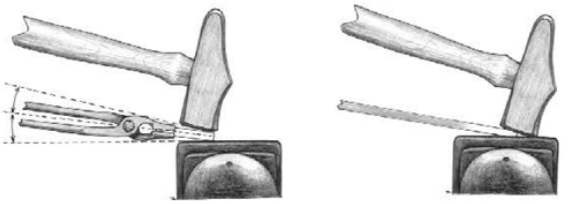


#1. Drift with a long, leading taper, straight middle section, and short trailing taper, all concentric along the long axis.

In this lesson, we will make a drift as mentioned in example #1. The taper initially inserted into the hole to be drifted needs to set itself in a stable position when placed into the rough hole so as not to require peripheral tools to hold it vertical. Usually a long taper provides this stability.
The drift should be made as short as possible, as this will shorten the time it takes to drive it through the piece, and will to some degree prevent the drift itself from buckling. (See drawing#1 of a 1/2" round drift.)
The drift we will be making in this lesson will be for sizing a 1/2" diameter hole in bars up to 1 3/8" thick. It will have a long taper(the leading end) of 2 1/2", a mid-section of 1",and a short taper (the driving end of the drift) of 1 1/2", for a total length of 5".

Step #1
In this step, you will be forging the leading, tapered end of the drift. Your goal is to initially forge a 2" square taper, with straight, flat facets.
Using the 1/2" V-tongs, place the bar in the fire and heat 3" of the 1/2" round bar to yellow. Caution! Do not leave the tongs in the fire, as they will get hot and will distort when forging.
Note: Sometimes it can be tricky to remove a

short bar from a coal or charcoal fire. The tongs used to hold the bar can be clumsy, as bits of coal or charcoal block a clear path to grab the bar. If you have a pair of pick-up tongs, (tongs with narrow, flat bits) they may come in handy to pull the bar from the fire. Once you have the bar out of the fire, quickly change to the appropriate size tongs for the job. With your 1/2" V-tongs, place the end of the bar on the face of the anvil at a 10-degree angle. With the hammer's face angled at 20 degrees, strike the end of the bar two or three times. (See drawing #2a, and 2b.)



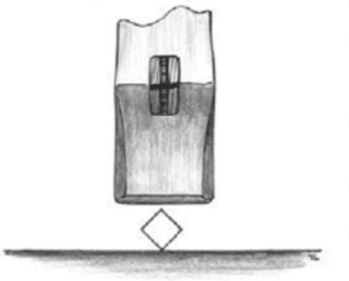
#2A, left. Hammer angle to the bar is equal to the bar angle to the anvil for an even taper.
#2B, right. Damage may occur to the anvil face if hammer blows land beyond the end of the bar.

Next, tumble the bar in place 90 degrees and strike two or three times. Repeat this action several times, working on the bar, until the end reaches about 5/16" square. Once the square end has been established, lay the taper flat on the anvil and work the taper back a bit, so the taper ends up at 2" long. The intent is to keep the cross-section as square as possible during this process. Continue working until the facets are straight, and the corners sharp.

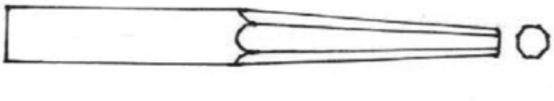
Caution: Drawing the bar down too thin in cross section will cause the bar to fold rather than extrude. (See drawing #3 of a bar drawn down too thin.)

At this stage, the end of the taper should be 1/4" square.

Step #2 our goal is to now forge an octagonal taper, with eight equally tapered facers. Heat 3" of the end of the bar to bright yellow. Be careful not to burn the now-narrower rip. Place the taper of the bar flat on the face of the anvil, but this time place the bar on the diamond (See drawing # 4.) Begin forging the sharp corners, starting from the end, and corning back towards the main body of the bar. Your blows should be light towards the end of the taper, and gradually increase in force towards the middle of the drift. Tumble the bar 90 degrees as you did in step one, until the taper has eight equally tapered facers. You should be able to do this in one heat (See drawing #5 as to how the bar should look at this point.) The end of the taper should be 1/4" across the facets .



#4. Striking the square on the diamond



#5. Octagonal taper produced from a square taper.

Step #3

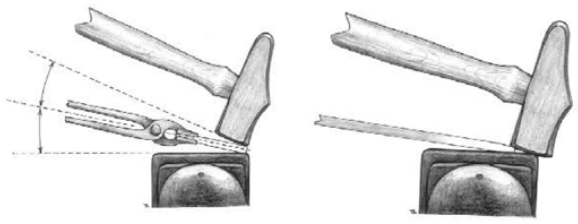
Your goal in this step is to forge the octagonal taper into a round taper.

Heat 3" of the end of the bar to bright orange. Place the bar so one of the eight corners of the taper lies flat on the face of the anvil. Begin to lightly forge each corner its entire length, then indexing to the next (right or left.... it is up to you which direction.) At some point, the facets will be too numerous and small to define. When this happens, simply roll the bar left to right, right to left repeatedly while striking light but rapid blows of the hammer on the very end of the taper first (so you utilize the heat in the bar where it cools rapidly.) Watch

for high spots. Lightly tap them with the hammer, not too hard as you will create new facets and high spots. Work your way up into the larger diameter of the bar until you have a smooth and round finish, free from facets and high spots. Because in this hear your intent is not to make major changes to the bar but rather refine the surface, it is acceptable to work well into a black heat. Your taper should be 2 1/2" long. The end of the taper will be slightly less than 1/4" in diameter.

Step #4

In this step, you want to forge the short taper on the driving end of the drift, which will be 1 1/2" long. You will utilize what you learned in step one, but alter the angle of the bar to the face of the anvil more severely than in step #1 to 20 degrees . The steeper angle will help to produce a shorter taper. The hammer blows should begin at 40 degrees. Heat 3" of the opposite end of the bar to bright yellow. In this hear, place the end of the bar at the far, rounded edge of the anvil.



#6A, left. Forging a taper at the far edge of the anvil with the bar held at the median angle between the hammer and anvil.
#6B, right. Hammer face and anvil edge may be damaged if the end of the bar is not kept at the edge of the anvil.

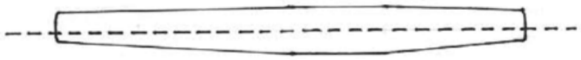
Note: Because you are working at a more severe angle, you may risk accidentally hitting the face with the hammer. Holding the bar at the far edge of the anvil reduces the chances of marring the anvil face with an errant blow. (Sec Drawing #6A and 613) As you did in step one, tumble the bar 90 degrees (right or left) after three or four blows of the hammer, thereby forming the initial square taper. Once the taper's end reaches about 5/16" square, with a taper length of 1 1/4" long, place the taper on the diamond, and proceed to forge the square taper into an octagon as you did in step # 3, with eight equally tapered facets. The end of the taper should be 5/16" in diameter.

In the same heat, forge this short octagonal taper into a round taper, similarly as you did in Step # 4. This step should complete shaping the drift.

Step #5

This step is only necessary if the drift is shaped incorrectly along its axis.

Inspect your drift to see whether the tapers are concentric around the axis of the main (middle) body of the bar. (See drawing #7 of a drift with misaligned tapers.)



#7. Misaligned tapers– not concentric along the long axis.

Roll the drift on the anvil face. If the tapers wobble, you need to align them to the center of the drift. You might also be able to see the error by sighting down the drift as you would a rifle barrel.

Next, determine where the taper(s) need to be adjusted. Lay the errant taper across the hardy hole, with the straighter edge facing down.

Tap me taper with your hammer head over me hardy hole once or twice. This should bend the drift slightly to correct the problem. Re-inspect and repeat until the error has been corrected. This can be accomplished cold, as long as you haven't quenched the bar at a high heat.

(Rcfer to drawing #1 to see how the finished drift should be shaped, with the points of the taper aligned with the axis of the middle.)

Note: When a bar cools, it shrinks. There will also be some shrinking in the hole that was drifted. For instance, if your hole needs to be

1/2" in diameter, and no less, you will need to slightly increase the diameter of the middle of this drift by upsetting it. Do this before you make the tapers; otherwise, you will distort them.

Step #6

Do not leave the end of the driving taper ragged, as the hammer will not transfer the energy efficiently to the drift. Dress the driving taper end of the drift to a flat or to a crown. Crowning can insure that the drift drives in more reliably, with less deflection from an errant blow. A crown also resists mushrooming.

Targets:

1. The drift is to be free from facets.
2. The drift is to be 5" long.
3. The short taper is to be 1 1/2 " long, and 5/16" in diameter at the end.
4. The long taper is to be 2 1/2" long, and 1/4" in diameter at me end.
5. The drift is to have 1" of the middle at 1/2" in diameter.
6. The drift's tapers arc to be concentric around the axis.
7. The end of the driving taper is to be dressed .

From The Hammers Blow Spring 2009

Easy T-Nuts

by Brian Gilbert
Chattanooga, Tennessee

I recently had to make a number of T-nuts for my milling machine, and I came up with a simple set-up for drilling a number of parts accurately and quickly. This is very basic to those of you with machine shop experience, but it might help those of us who are more in the beginner's category... myself included.

I made a drill press fence that is nothing more than a small strip of wood screwed to a piece of plywood. It's easily clamped to the drill table with welding clamps, and also easily renewed when it gets full of holes . I added a small piece of metal on one side to act as a stop. Using this fence and the stop, I aligned the setup using an existing T-nut. A tiny drill bit chucked in the press served as a locator, and I moved the base around until the drill bit appeared centered in the existing hole. I then marked the fence with the length of the finished piece. I chucked in the correctly sized drill bit. A short length of 1l2"x 3/16" stock was finished on one end and placed on the fence, and then drilled. A sharp drill bit helps keep the tip from wandering, and it was drilled without a center punch. After drilling, the piece was marked with a square.

Since these T-nuts arc very small, they were cut using a bolt cutter. This also helped chamfer the edges, reducing cleanup time.

Once cut, the sharp edge was sanded off with the belt grinder, the bar dressed, and the whole process repeated. I had eight Tbolt blanks in no time. But they had to be tapped, and I'd heard of a high-speed way for this as well. A bar of 1/2" square stock was drilled just undersize of the tap. This became my tapping guide. I used the same setup in the drill press, I just changed the bit. Next, I drilled a clearance hole in a 1/2"-thick piece of wood and clamped this in my vise. The guide was clamped over the T-nut blank, with a spacer on the back of the guide to keep it square. Then I ran the tap into the whole pile ... these small holes would usually tap within ten seconds. Occasionally I'd have to reverse the drill to clear the chips, but the chuck slipped at just the right moment to prevent breaking

New Jersey Blacksmiths Newsletter

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

NAME _____

ADDRESS _____

CITY_____

STATE/PRO V. _____

COUN-
TRY_____

ZIP (+4)/POSTAL
CODE_____

PHONE #
_____

EMAIL
_____

Order Online, Mail, Call or Fax your Check or Credit Card Payment to:
ABANA Central Office

ABANA

___Regular Member$55.00
___Senior Citizen (Age 65+)$50.00
___ Full Time Student$45.00
___Foreign Member$65.00
__Public Library-USA$45.00
___Contributory $150.00
MASTERCARD OR VISA ACCOUNT NUM-
BER

_____-_____-_____-_____

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

NJBA Membership Renewal, Ballot, and Volunteers' List

(Please check your mailing label for the year your membership expires. If '2018' or less, your dues are due immediately, and must be paid for your vote to count. If '2019' or greater, you may vote without making any additional payment.)

Mail completed renewal form and ballot, along with check for dues, to:
NJBA Election, P.O. Box 224, Farmingdale, NJ 07727-9998

Name _____

Address_____

City, State, Zip _____

Phone Numbers: Day _____ Eve. Cell

Email address _____

My check is enclosed: [ ] $20 (regular membership dues), or
[ ] $40 (business membership dues)

Ballot

To vote for a nominee, please check the box next to his name.
[ ] Check here to vote for ALL nominees.

Nominee	Nominee	Nominee
[ ] Ryan Amos	[ ] Dave Ennis	[ ] Mark Morrow
[ ] Billy Barrett	[ ] Bruce Freeman	[ ] Al Mottram
[ ] Marshall Bienstock	[ ] Tony Fresolone	[ ] Bruce Ringier
[ ] Larry Brown	[ ] Ron Jani	[ ] Ben Suhaka
[ ] Eric Cuper	[ ] Tom Majewski	[ ] Damian Toryak

NJBA Volunteers List

"Please put my name on the list of potential volunteers:" (**Circle** all that apply.)

Availability: Saturdays Sundays Weekdays
Interests: Demonstrating Coaching Novices Assisting at Workshops
Experience: Novice Intermediate Experienced Professional