N.J.B.A. Newsletter

NJBA Volume 21, Issue 2 22 Nov. 2017

Upcoming Events

Many of our meets feture 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.

Sunday, Dec. 3, Holiday Party. 3 PM. Pot-luck dinner; BYOB. See details below.

Saturday, Mar. 17, 2018. Damascus Workshop Similar to previous such workshops. $1500 fee + $35 materials fee. See announcements, below.

Saturday, April 21, 2018. Knifemaking Workshop Similar to previous such workshops. See "Knifemaking and Damascus Workshops" announcements, below.

Saturday, May 12, 2018. Anvil-Repair Workshop See detailed announcement, below.

Saturday, May 26, 2018. Advanced Damascus Workshop More advanced than previous Damascus workshops. See "Knifemaking and Damascus Workshops" announcements, below.

June or JulyPCCM Open Forge Meet Princeton U. may host a summer open-forge meet for students. Volunteers are solicited to help. Contact NJBA Director Ryan Amos if you would like to assist.

See p. 2 for Directors' contact information.

Your membership dues were due last September
If you have not renewed, this will be your last newsletter!

Holiday Party, Sunday , Dec. 3

Once again Jan and Marshall will be hosting a **pot-luck dinner** at their "cabin" at 301 Casino Drive, Farmingdale. (This is 2.1 miles east of Marshall's Farm.)

The party will start at 3 PM, and dinner usually begins an hour or so later. Guests are asked to bring a covered dish, salad, desert, etc. If possible, please call Jan at 732-938-6577 a week or so before the party to let her know what you'll be bringing.

The party is BYOB, so bring your favorite beverage. NJBA will provide soft drinks, utensils, etc. All members and their families or "significant others" are welcome.

Knifemaking and Damascus Workshops

Each of these three workshops (See "Upcoming Events") is limited to 6 participants. The fee for each is $150 (and 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. *Note: Tasks performed at these workshops are limited to the projects being taught and no other.* Contact NJBA Director Mark Morrow for further information. and to register. Tailgate sales welcome.

Anvil-repair Workshop

NJBA will be holding another of our famous participatory anvil-repair workshops on May 12, 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. *(continued on page 3)*

NJBA Board of Directors

Board members are not listed online

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

Events Outside New Jersey

Jan 5-7 2018. Gichner Memorial Hammer-In. Usually held at Dave Hutchinson's Farm, 11008 Lewistown Rd, Cordova, MD 21625.

Wed., Jun 27 – Sat., 30 Jun, 2018. ABANA 2018 Conference Meadow Event Park Richmond, Virginia. Visit 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

Anvil-repair Workshop, *continued.*

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 com 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.

Report on the Middlesex Co. Fair

by Bruce Freeman

On Saturday, Aug. 5, I took my little pickup truck to Marshall's Farm and loaded up two forging stations, plus about 150 lb coal. This took me 2 hours. It should have taken me 30-45 minutes. The reason was that I had to completely disentangle two forging stations from all the rest of the equipment. (Something has to change, and I have already begun a discussion with the Board about replacing the NJBA trailer with a shed.)

The Fair was slated to open on Monday, Aug. 7, but the forecast called for rain and possible thundershowers later. Not caring to set up in the pouring rain, I drove up early, arriving at about 8:30 AM, and set up the equipment by myself in only two hours -- which would have been an impossible feat before we fabricated this lightweight forging equipment. The set-up took this long because it included setting up, and staking down, both canopies -- difficult for one person -- plus stringing the lights on them, setting up and staking down blowers and vises, then chaining and locking up the equipment while unattended. Had I had assistance, this task could have been completed much faster.

It was raining lightly throughout this process so I got wet. Accordingly I drove home to change and rest till evening, expecting to return by 5 PM. However, at 3 PM I got an email that the Fair would not open on Monday after all, due to the rain. I contacted the folks who were slated to show up Monday to tell them not to show.

I was not scheduled to demonstrate again till the weekend, and it seemed that everybody was okay with that. I understand our poor canopies filled with water Monday night, and our Tuesday demonstrators (Marshall Bienstock and Tony Fresolone) had their hands full emptying them. I heard of no other problems or difficulties.

Saturday and Sunday, Al Mottram, Tony Fresolone and I were the demonstrators. Al and Tony were so keen, however, that I spent most of my time exploring the Fair, so I have little to report regarding the demonstrations themselves. It seemed to me that the fairgoers showed their usual interest in our work, enough to justify our presence there.

As promised, the Fair came through before 9 PM Sunday by unlocking the gate near our demonstration area. I brought my truck in and the three of us loaded it up and headed off, not too much after 9 PM. So, aside from the Monday closing, the week went well.

Thanks are due all our demonstrators: Marshall Bienstock, Ryan Amos, Ben Suhaka, Al Mottram, Michael Gutholc, and especially Tony Fresonlone, who worked more days than anybody else.

Report on the Red Mill Hammer-In

by Bob Bozzay

NJBA held its annual Hammer-In at the Red Mill Museum Village in Clinton on Sunday September 17th. Vendor turnout was lower than usual. The gate indicated over 50 in attendance even though it seemed to me there weren't as many as in past years. The weather was pleasant and the "Iron in the Hat" went off well. Dave Bala and another member demonstrated in the shop. I understand that several new members signed up. We also had plenty of leftover food. The Red Mill has extended an invitation to come back next year.

Report on Waterloo Village Heritage Day

Ms. Bierce Riley (who, incidentally, is a Master Charcoal Burner) from Waterloo Village contacted NJBA by phone. They needed a blacksmith for their event on Sept. 9.

Tony Fresolone stepped up to man this event, and reports that they had lots of visitors, a nice facility with a good shop, tools and steel. (He was able to work in their shop and use their equipment, which had not always been true in the past.)

Report on Princeton U. Open Forge Meet
by Bruce Freeman

NJBA was contacted this past June by Princeton Univerity about holding another open forge meet at Princeton in the autumn. After some discussions about the date, volunteers, arrangements for equipment, etc., we settled on October 14.

The week before the meet, NJBA Directors Ryan Amos, Tony Fresolone and I loaded up five of the lightweight forge stations to take to Princeton University. space in Bowen Hall offered by the University.

On the 14th, I picked up Marshall Bienstock and we headed out to Princeton early enough to meet the fire inspectors. Ryan, Tony, and new NJBA member Claudia Brunner, showed up soon after. We started by setting up the five forging stations in front of Bowen Hall in two ranks, facing downwind. Al Mottram arrived while we were setting up.

While we fired up the five forges, Professor Craig Arnold lectured the attendees on the "materials" aspects of blacksmithing. We soon had the students working on the forges. As in previous years, the typical product was something simple like an S-hook, possibly with embellishments such as points, twists, etc.

Dr. Arnold took charge of the red forge around noon. He said he wanted to forge a trowel, but when I pointed out that the steel stock we had available would make this difficult, he decided to make a weeding tool instead. His product worked fine on a couple wide-leafed plantains in the Bowen Hall lawn.

Eric Van Arx, who was available only half the day, showed up at perhaps 1 PM and took over for me at the white forge. In the afternoon, Marshall demonstrated blacksmithing to a number of children who had shown up.

The University provided lunch and drinks, as usual. I understand that about 60 participants and spectators were present. I think about one or two dozen actually tried their hands at forging.

Report on the MAST Open Forge Meet
by Bruce Freeman

Christopher Zrada, an instructor at the Marine Academy of Science and Technology (MAST) on Sandy Hook, had contacted me last year about holding an open forge meet for the Junior -class students, but we were unable to find a date we could hold it last spring, so deferred it till this autumn. MAST is one of Monmouth County's vocational high schools. (Website: www.mcvsd.org/mast.html)

I had prepared for this event by asking the NJBA membership for volunteers to help out. I arranged with MAST for a truck from the vocational school district to pick up the equipment -- all six forging stations -- and take them to Mr. Zrada's shop. A few days before the event, two workers from the school district and I loaded the truck with all the equipment and left for Sandy Hook. I drove up there as well, as I hadn't yet had a chance to check out the area we had for setting up the forges. I arrived after the truck did, and met Mr. Zrada at his shop, and we unloaded the truck into the shop.

The forecast for Tuesday, Oct. 24, called for terrible weather -- wind and thunderstorms. I arrived around 7 AM (before school opened) and located the least windy areas in the lot outside Mr. Zrada's shop.

Shortly, three volunteers arrived -- Al Motram, Walter Hunter, and Patty Miller-Pittman.

We started by setting up canopies, with the aid of a few student volunteers. We quickly discovered we

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

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.

were not going to be able to stake down the canopies with the stakes small enough to fit the holes in the legs of these canopies, so Al located some cement blocks and started tying the canopies to those. Eric Cuper, who came from Easton, PA, for the event, soon arrived and helped set up.

The lightweight equipment is great to work with and the set-up went smoothly, but setting up six forging stations still took a while, especially driving the heavy stakes for the blowers and vise stands through the gravel of the lot. With help from a few students, set-up was completed in good order.

Eric then fired up three forges by himself. Patty, Al and I each fired up a forge, and Walter took over from one I was firing up, so I could attend to other matters. We were ready for students before 9 AM. We coached them in such techniques as drawing out, scrolling, and twisting. Eric coached students at two forges for much of the day, while Walter, Patty, Al and I coached students at the other forges. Tony Fresolone arrived around 10:30 AM and immediately started coaching the students.

Most of the students tried various combinations of drawing out (pointing), bending or scrolling, and squaring (the round stock) and twisting. One student did some upsetting of the bar ends. I don't think anyone created anything particularly useful, but they did get to try techniques of blacksmithing.

Around noon, the school provided the volunteers with sandwiches and cookies for lunch, a welcome respite.

As I'd hoped, the weather was nowhere near as bad as the forecast. There was no thunderstorm, and only some rain from time to time, but the wind was strong enough to blow down a few flues, so it's well we weighted down the canopies with concrete blocks.

Toward the end of the school day, the coal supply (seven 40# bags) was getting low, but we made it to the end without actually running out. There was maybe 20# unburned coal left when we cleaned off the forges on breaking down. The breaking down went smoothly, with all of us and the truck driver working.

I led the truck driver back to Marshall's Farm. He helped load the NJBA trailer, doing much of the heavy lifting himself, for which I was grateful. Unfortunately, I had to be fairly quick about loading the trailer. Although all the equipment got put away as neatly as possible, it will not be easy to get out a particular color forging station next time. This will be remedied if we get or build a storage shed for the equipment.

Demonstrators Needed

East Jersey Olde Towne in Piscataway NJ is looking for blacksmiths to demonstrate to school groups and the public weekdays and weekends starting in the spring 2018 and through the fall. The Historic Village is open 8:30 till 4:00 PM and is located in Johnson's Park across River Road from Rutgers's Stadium.

Anyone who is interested can contact Matthew Stroh at EJOT 732.745.3030 Ext 304. More information can be found at http://www.middlesexcountynj.gov/Government/Departments/BDE/Pages/East-Jersey-Olde-Towne-Village.aspx

Bob Bozzay (robert.bozzay@gmail.com) currently works there two days a week. He can provide additional information.

What I would change for the future: (1) Post documents describing the elements of blacksmithing and simple things one can do or make in 1/2 hour on our website, and provide the link to the students. (2) Get the concrete blocks out before the event date to speed that aspect of setting up. (3) Bring extra coal - maybe 60# per forge for a 5-hour day. (4) Insist that the person doing the forging crank the blower himself, to conserve coal. (5) Add three more lightweight blowers to NJBA's equipment. (We were using the heavyweight blowers on three of the forges.)

This event was also written up by the Atlantic Highlands Herald: www.ahherald.com/newsbrief/local-news/24828-students-try-blacksmithing-to-learn-new-skills

Highlights of the November Board Meeting

Eight NJBA Directors were in attendance. NJBA member Jonathan Valez attended part of the meeting, and helped out by coaching a beginner who showed up this evening, freeing the Directors to attend to business.

The Board allocated funds to purchase 3200 lbs of bagged coal. No decision was made whether to resell coal to members. (Metallurgical coke remains available to members at $10 per bag.)

The Board allocated funds to purchase eight dozen heavy-duty pocket T-shirts, in sizes ranging from medium to 3X, with an anvil logo on the pocket and a leg vise on the back. These will be sold as a fund raiser: M, L & XL for $20; 2X & 3X for $25.

The NJBA election is over. All Directors on the Ballot were reelected. (Tony Fresolone was elected by the Board during this period and will be up for reelection in 2018.)

The Board allocated $800 for the cost of a shed, including any transport or other costs to set it up at Marshall's Farm, the expenditure to be decided upon by a majority vote of a subcommittee including Marshall, Larry, Al and Bruce. At least two possibilities are under consideration.

Mark scheduled three workshops for the spring: Damascus, Advanced Damascus, and Knifemaking.

Sufficient interest had been shown in an anvil repair workshop to schedule it for the spring.

Princeton University has requested a summer open forge meet for June or July.

Former Director Dan O'Sullivan has donated a few pieces of heavy rail to NJBA for use in making anvils. The Board decided to rough-cut these into anvil shape and then to sell these to members who can grind them to final form.

The Board discussed ideas to increase the number of membership meetings. Possibilities discussed include bringing in an outside demonstrator, running additional workshops, holding events at members' shops, group visits to museums and other facilities, or even a group project. Some ideas presented will be explored.

The next Board meeting was set for Monday, Feb. 12, 2018, at 7:30 PM in Marshall's shop. NJBA members may attend.

Volunteers Needed

Recently we've had to solicit volunteers for a number of events, including demonstrators for Walnford 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 next year about volunteering. If you don't, then you will probably see few if any requests to volunteer. Your choice. There is no obligation.

As this newsletter was going to press, we were contacted again by Princeton University. They would like to hold an additional open forge meet this summer -- June or July, probably on a Saturday. We will need volunteers to help man the forges, **so it would be very timely for you to add your name to the list.** (See the last page of this newsletter.)

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

New Jersey Blacksmiths Newsletter

Controlled Hand Forging Lesson 19

Splitting the End of a Bar

Text and photos by Dan Nauman

Drawings by Tom Latané

Lesson #19. Unit: Cutting

Definition: Using a sharp edged tool to cut or alter a bar, or to remove material from a bar.

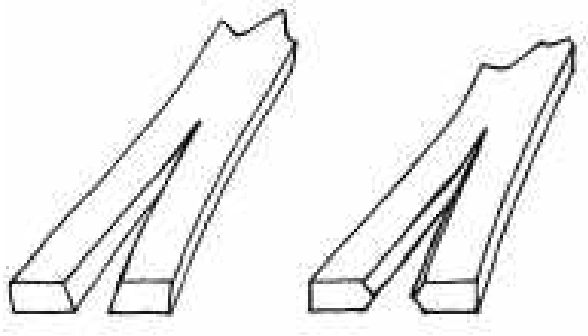
Intent: To learn to use a hot-cut chisel to cut down the centerline from the end of a bar.

Tools: Basic tools, plus a hot-cut chisel, cutting plate or saddle, tool to hold the hot cut, tool to hold the work-piece.

Material: 2 pieces of 1/4" x 1" x 24".

Note: There are two methods of cutting we will teach in this lesson. Method one (M1) will teach cutting a bar from one side all the way through. Method two (M2) will teach cutting a bar from opposing sides. Each method leaves a very distinctive kerf. (See Drawings #1 and #2.)

Image #1 shows the kerf made by method one. Image #2 shows a kerf made by method two. It is important to determine which method to use in order to achieve a specific goal. Thinner materials,



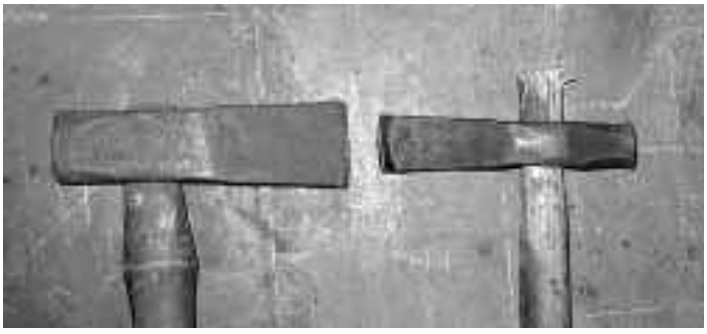
1 &2. Method 1 kerf, left, and method 2 kerf, right

1/4" (one quarter inch) or less, are often (but not always) cut using method one. Thicker materials are often (but not always) cut using method two.

Forging Dynamics: On either side of the kerf, the bar-stock will be displaced by the thickness of the chisel. The chisel should be thin so the amount of stock displaced is minimal. As the bar begins to split, the opposing sides of the kerf (legs) will peel away from the line of the cut. This stretching is caused both by the material being pushed apart by the hot-cut chisel.

Note: It is important to use the correct chisel. A cold-cut chisel, as the name implies, is used to cut cold stock. This type of chisel needs to be heavier, or backed up by enough material so the chisel does not snap or crack from the shock of cutting the harder cold stock. Because it is cutting softer material, the

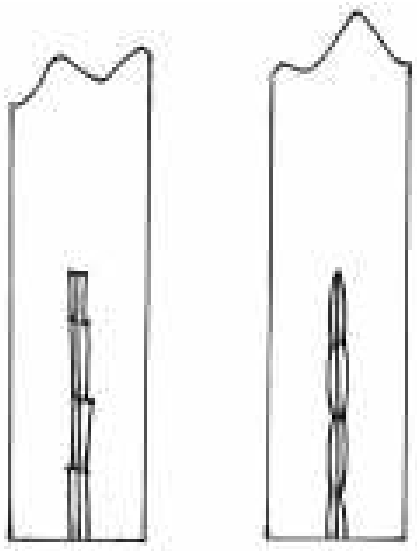
3. Notice the difference in the thickness between the cold cut (left) and the hot cut (right).



4. This photo shows the rounded edges of the hot and cold cut, which allows the tool to slide along the workpiece more easily. Than if the edges were square.

hotcut chisel receives less shock, and can have a more acute bevel. (Photo #3 a+ b shows the difference in blade bevels of the hotcut chisel and the cold-cut chisel.) Note that both chisels have rounded, not square edges. This allows the chisels to easily track in the kerf, and in some cases, allows you to make a curved kerf. (Photo #4 a+ b shows the side shape of the two chisels.) A square chisel is harder to control, as the abrupt wall left by its impression makes it necessary to lift the blade out of the kerf track to advance. (See Drawing # 5 of the potentially bad kerfs made by a square chisel) In this lesson, we will be using the hot-cut chisel.

The specific purpose of the cut may determine which method you choose. For example, if the legs formed by the cut are to be drawn out, it would be easier to draw out a M2 kerf, which has a center crown, being beveled from both sides, rather than a



5. Scars potentially produced by a square-edged chisel and a wavy cut potentially produced by an overly rounded chisel.

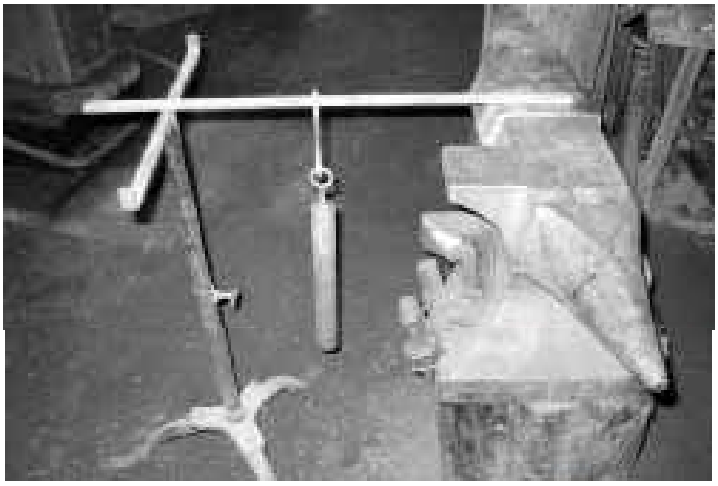
section with one tall beveled edge as seen in the M1 kerf. On the other hand, an M1 kerf might be desirable as the naturally beveled edge left from cutting may serve as a decorative accent. Method one could be used for making a split scroll with a beveled edge, while method two could be used for beginning the end of a fork.

Holding the bar steady while cutting must be considered. There are several methods of holding the bar for cutting. One method for cutting short bars is to use a holdfast, as seen in Photo #6. A holdfast can easily be made out of mild steel, of a slightly smaller

6. The holdfast slides into the pritchel hole, and holds the work-piece firmly with a light tap of the hammer above the holdfast's vertical shank. To remove the holdfast, lightly tap the side of tool's vertical shank with the hammer.

diameter than your anvil's pritchel hole. To use the holdfast, simply slide the shank into the pritchel hole, and place the flange on top of the work-piece. Lightly tap the top of the holdfast to secure the work-piece onto the anvil.

For longer bars, you could use a "blacksmith's helper" which is an adjustable stand. Some smiths prefer to use a weight to keep the piece steady while



7. A blacksmith's helper stand helps to hold longer bars. The attached weight helps keep the workpiece steady. Adjust the blacksmith's helper so the workpiece lies flat on the anvil or cutting saddle.

cutting. One way to apply the weight is to attach a chain to an "S" hook, and attach the weight at the end of the chain. (See Photo 7.) When using the blacksmith's helper, adjust the stand so the bar rests flat on the face of the anvil.

The important thing is to keep the piece flat and stationary on the anvil while cutting. If the bar is not resting flat on the anvil face, the bar will bend more dramatically, and the impact of the chisel will be lessened as well.

Holding the chisel is also a consideration. If you have a chisel with a long enough shank, you may be able to hold it while cutting without burning your hand. It might be easier for some to use a pair of chisel tongs to hold the chisel. Many smiths prefer to use a chisel with a solid handle of either a bar wound around the chisel, or a wood handle that pierces the chisel. (See Photo #8 showing the tongs, and two types of handles) For this lesson, we will use a chisel with a wooden handle.

Cutting Method #1

Step One. Measure 2" from the end of the bar, and with a centerpunch, mark the exact center of the bar. Make the punch mark large enough to see when the bar is hot, but not too large, as a large punch mark might remain visible after cutting.

8. A wooden-handled chisel, left, dedicated chisel-holding tongs, center, and a wrapped handle (on a punch), right.

Step 2. Heat 3" of the end of the bar to yellow. Place the end of the bar flat on the anvil. Place the center of the chisel on the end of the bar at the bar's center. Lightly tap the chisel to create a light impression, about 1/32" or less deep.

Note: In this step, you do not wish to drive the chisel through the bar, nor create a bold kerf as you need to first establish the proper kerf track. If your judgement is off, the light impression will not usually be deep enough to ruin the project, and can be corrected by simply adjusting the chisel to create a new kerf. The new kerf will push material towards the old kerf, closing it up. Unless you are dramatically off in your initial judgement, this correction will likely be undetected in the finished piece.

In the same heat, move the chisel by sliding, not lifting it, one half the width of the chisel, and take another light tap. You should always slide the chisel towards you, as you can see where the chisel is in relation to the bar. When moving the chisel, always leave a portion of the cutting edge in the track of the kerf from the previous blow. Some smiths prefer to linearly rock and then slide to advance the chisel. These procedures insure that a double kerf line isn't accidentally formed.

Continue the light kerf all the way down to within 1/16" of the center-punch mark, making sure you remain in the middle of the bar. If you make an errant blow along the way, make the correction immediately before continuing down the bar. Make sure the chisel remains perpendicular to the workpiece at all times.

Forging Dynamics:

The bar will begin to curl upward as the force of the chisel makes impact. To cut properly, the bar must be tapped down flat on the anvil every time you retrace the kerf to deepen the cut.

Note: When cutting heavy stock, some smiths prefer to quench the chisel after four or five blows to keep the chisel blade cool. This is more important when using a chisel of simple carbon steel.

Step 3. Take another yellow heat 3" long. Place the bar on the cutting surface. Note: STOP! Do not even think about cutting through the bar on an unprotected anvil. It is believed by some that the table of the anvil, sometimes referred to as the step of the anvil, is to be used for cutting. Doing so will only scar the surface to the point where it is no longer useful. The bottom of the hot bar will sink into the scars left by the chisel

from past cuttings, leaving unsightly marks on the work piece.

A piece of 1/8" to 3/16" thick (or thicker) plate of copper, brass, or a piece of low carbon steel can easily be used as a base beneath the bar being cut. Make sure it is large enough to effectively support the

9. This cutting saddle was made from 1/2'x 3," lies flat on the anvil face and fits snuggly over the edges. The thickness has been reduced by re-dressing the surface to eliminate surface scars made from cutting through the workpiece.'blacksmith's helper so the workpiece lies flat on the anvil or cutting saddle.

workpiece. Some smiths prefer a more stable cutting surface, and may shape the cutting plate to fit snuggly over the edges of the anvil. This tool is called a cutting saddle. (See image 9 of a cutting saddle.) This not only protects the anvil, but also protects the chisel edge. When the surface of the plate or saddle becomes scarred, simply throw it away and make a new one, or if it is thick enough, you may remove the scars by grinding or forging.

As you did in step two, place the chisel at the end of the bar and this time strike the chisel with a medium to heavy blow as now your aim is to drive the chisel through the bar.

Move the chisel down the bar as you did in step two, creating a deeper kerf. Again, stop short of the center-punch mark. If you have not split the bar at this point, repeat the process until the bar is split through, hitting with less force to save the cutting plate from getting deep scars.

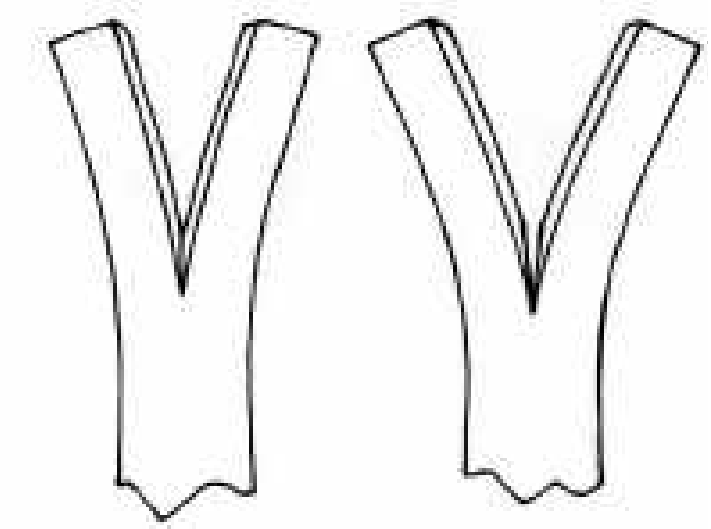
Step 4. You now want to finish the cut with a nice square edge at the bottom of the cut. The reason the initial cut is not cut right down to the center-punch mark is that since the chisel is curved, you will not have a clean square kerf at the end of the cut.

Note: In some cases, a tapered kerf at the end of the cut may be desired as a design element. For the purpose of this lesson, we are explaining how to finish the cut with a squared termination. (See image 10 showing the two types of terminations.)

To finish the cut, place the bar tightly in a vise with the centerpunch mark 1/4" above the vise jaws with the legs in the vertical position. Place the chisel between the legs of the cut and carefully drive the chisel straight down until the chisel just pierces the center-punch mark. This last step can be done at a low orange to orange heat. A lower heat may be easier to control, as the chisel will meet more resistance, and you are less likely to cut too deep. Properly executed, the bar should now look like image 10.

Targets - The kerf must be through the middle of the bar within 1/32" per side.

•The kerf must have a clean appearance, with no



10. A tapered kerf end, left, and a straight kerf end, right.

ragged edges.

•- There must be no double kerf lines.

•- The kerf must be 2" long within 1/64" (one sixty fourth inch).

•- The face of the bar must be flat. - The inside end of the kerf must be square to the face of the bar.

•- You should be able to split the bar in three heats. With practice, you could split it in one heat.

Cutting Method #2

• (Review method one for forging dynamics, and notes to the cutting procedure.)

Step 1. Measure 2" from the end of the bar, and with a center punch, mark the exact center of both sides.

Step 2. Heat 3" of the end of the bar to yellow. Place the end of the bar flat on the face of the anvil. Place the center of the chisel on the end of the bar at the bar's center. Lightly tap the chisel to create a light impression, about 1/32" or less deep. Move the chisel by sliding, not lifting it, one half the width of the chisel and take another light tap. Continue the light kerf down to within 1/16" of the center punch mark.

In the same heat, tap down the end of the bar to regain a flat bar. Retrace the kerf with the chisel, taking a heavy enough blow to cut half-way through the bar.

Step 3. Heat 3" of the end of the bar to yellow. Rotate the axis of the bar 180 degrees. As you did in step two, cut a light kerf to within 1/16" of the center punch mark, then tap the end of the bar to regain a flat bar.

Note: Accuracy is important! If you do not cut a line down the middle of the bar, you will get a kerf offset from the kerf on the other side. (See Drawing #11 of offset kerfs vs. two opposing kerfs.) To make sure you begin the second kerf in exact opposition to the kerf on the other side, look at the end of the bar to view both kerfs simultaneously. If they are offset, make the correction immediately.

Next, with heavier blows, retrace the shallower kerf with the chisel, and drive the chisel through the bar. Remember to use a cutting plate or saddle!

Step 4. To finish the cut, at an low orange to orange heat, place the bar tightly in a vise with the center punch mark _" (one quarter inch) above the vise jaws, with the legs in the vertical position. Place the chisel between the legs of the cut and carefully drive the chisel straight down until the chisel just pierces the center punch mark.

Targets - The kerf must be through the middle of the bar within 1/32" (one thirty second inch) per side.

• - The kerf must have a clean appearance, with no ragged edges.

• - There must be no double kerfs.

•The opposing kerfs must meet cleanly; no heavy burr from offset kerfs.

• - The kerf must be 2" long within 1/64" (one sixty fourth inch.)

•- The face of the bar must be flat.

• - The inside end of the kerf must be square to the face of the bar.

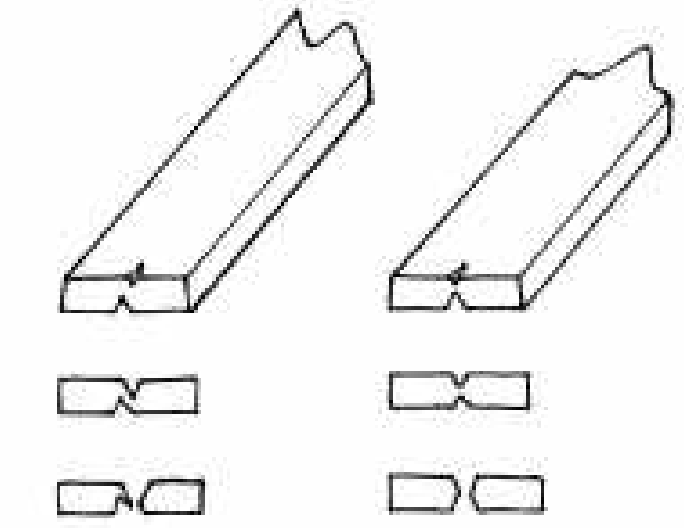
•- You should be able to split the bar in three heats. With practice you could split in two heats.

Notes about dressing the edge of the kerf:

1.) The kerf can be filed to suit the job.

2.) The legs can be bent away in a "Y" shape to 90 degrees, or one leg may be gently folded over the bar. The kerf can then be lightly forged with the face of the hammer, retaining the beveled edge. Afterward, the legs may be bent back.

3.) The legs can be bent or folded as above, then the kerfs can be forged so the cut edge is square to the face of the bar.



11. The result of offset kerfs (right) compared to opposing kerfs (left).