New Jersey Blacksmiths Association

N.J.B.A. Newsletter

NJBA Volume 22, Issue 3 February, 2019

Editorial:
Future Newsletter Volumes will be Emailed

As noted elsewhere in the "Unofficial Summary of the Board Meeting," ***only one more issue of this Newsletter will be sent to you by U.S. Mail.*** *Starting with Volume 23, issues will only be emailed,* **so be sure we have your correct email address!** Any NJBA member may print his own copy from the emailed .pdf version, if desired.

The main reasons for this change are costs and manpower. The printing and mailing of the Newletter is the single greatest fixed expense of NJBA, and dues have not kept up with it, as they haven't been raised in over 20 years. Furthermore, we have not had sufficient assistance in editing and mailing the newsletter: For most of the past 22 years, one of the two of us editors has had full responsibility for this effort, which can take several days.

In the past many folks had slow Internet connections, so an emailed newsletter might take prohibitive time to download, but that is no longer the case. However, **to accommodate those who don't use email**, beginning in June of this year, a member in good standing will be able to subscribe to printed copies of the newsletter **for an additional fee of $10 per year,** payable with his dues. (If you've paid your dues years in advance, this subscription fee will still apply.) - ed,

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Please Renew, Vote, and Volunteer Now

See pages 2 and 18.

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.

Sat., Feb 16. Braided Handle AND Hot Cut Workshop.

A demonstration of the forging of two different items -- a braided handle and a hot-cut -- will be followed by a hands-on workshop. All fees -- the $15 material fee, the $75 workshop fee, plus $20 NJBA dues (if not already a member) -- are due at time of registration. This workshop is open to more advanced students. Contact NJBA Director Mark Morrow for further information.

Sat., April 6. Joint Meeting of NJBA, PABA and NOMMA in Easton, PA

Eric Cuper is holding a joint meeting at Cuper Studios, 1301 Lynn St, Easton, PA 18042. The demonstrator(s) has not been determined as of this issue. 610 -438-8694 ericuper@hotmail.com

April or May. Bowie Blade Workshop

You will be guided in the forging of a simple knife blade, such as a drop-point. Some experience required. Date and fee to be determined later. Contact NJBA Director Mark Morrow for further information.

Spring. Steel Bloom Smelt

A demonstration to be run by Mark Morrow. Date and details yet to be determined.

Sat., August 24. Red Mill Meet & Picnic

Hold the date and plan to tailgate all your unwanted treasures.

New Jersey Blacksmiths Newsletter

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 Santomauro

Ben Suhaka

Damian Toryak

Directors' contact information only available on hardcopy.

Coal Now Available to NJBA Members

NJBA has purchased ten tons of "nut" coal of good analysis. In addition to using this coal for our demonstrations and open forge meets, this coal will be available for purchase by NJBA members at 20¢ per pound, on a bring-your-own-bag and bag-it-yourself basis. (Plastic bags of at least 3-mil thickness are recommended.) Please inquire of Marshall Bienstock for more information. *Note: The metallurgical coke we've been selling for years now is still available at the same price as above.*

Please VOTE and RENEW NOW!

In recent years, renewals (due in June) have filtered in slowly through the autumn. Please renew now. While you're at it, please vote. Also please volunteer if you've a mind to. The form for all this will be found on the back of this Newsletter.

-- editor

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.

New NJBA T-Shirts Available

Our new NJBA T-shirts are available for purchase. These navy blue heavy-duty pocket T's bear the anvil logo on the pocket and the vise logo on the back. Prices are $20 for sizes M, L & XL, or $25 for sizes 2XL & 3XL. *The 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 will be charged for one sweatshirt or up to two T-shirts. For further information, contact NJBA Director Bruce Freeman.

Open Forge Meets

(See "Rules for Participation in NJBA Hands-On Events" elsewhere in this issue).

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.)

Donations for Marshall's Open Forge Meet
Those of you partaking of the open forge meet at Marshall's shop will find a donation box under the sign-in sheet. This is an attempt by the NJBA Board to offset the costs of running this open forge meet. Contributions will be collected on the honor system, with a suggested donation of $1-$2 per person per evening.

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

Sunday Open Forge, Lambertville, NJ
May through October, 1-4 PM. NJBA members may have to join the Museum ($25/year) to participate. The Museum *is **not subject** to NJBA's age restriction.* Contact NJBA Director Ben Suhaka for more information. Address: 1605 Daniel Bray Highway (Rte. 29) just north of Lambertville, NJ. 609-397-2752 holcombe-jimison.org

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

Marshall Bienstock & Eric Cuper

Report on the Trade Axe Workshop

By Al Mottram

Mark Morrow, an NJBA Board Member and owner of Morrow's Blade and Blacksmith Shop http://swordsmith.net/, conducted a Trade Axe making workshop on January 19, 2019 in Howell, NJ.

A "trade axe" was used in trade between the European merchants / trappers and Native Americans during the mid-19th century

With an enrollment limit of 6 participants the workshop was filled to capacity. In preparation, Mark had prepared the requisite punches and drifts and the raw materials consisting of billets of low carbon steel and high carbon steel. He then led the group through the process of splitting and drifting a handle eye, splitting the end of the billet to accept the high carbon steel insert for the cutting edge, forging out the Trade Axe shape, forge welding in the cutting edge, rough finish grind and hardening and tempering. Each participant went home with Trade Axe head, and some newly introduced or enhanced skills. While this class was offered with no specific experience required of the participants, several of ABANA's Controlled Hand Forging curricula were applied such as:

Lesson #1 Drawing Out
Lesson #8 Splitting
Lesson # 11-2 Drawing Down - Part 2
Lesson #12 Forging A Shoulder
Lesson # 18 Drawing Out - Using the peen
Lesson # 19 Cutting - Splitting the end of a bar
Lesson # 20 Forging a Fishtail

These lessons can be found online at abana.org/education/controlled-hand-forging but have also been reprinted in past NJBA Newsletters.

Rules for Participation in NJBA Hands-On Events

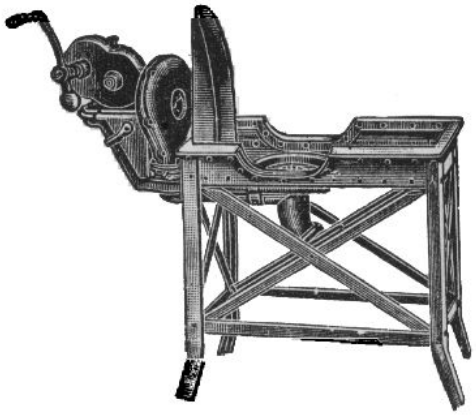
These rules applie to workshops, open forge meets, demonstrations with hands-on components, etc.

1. Participation in NJBA-sponsored hands-on events is limited to adults (i.e., 18 years or older). This rule was effected as of December 4, 2016.

- This policy *does not apply to open forge meets and similar events that are sponsored or co-sponsored* by youth-oriented organizations such as scouts, 4H groups, schools or other venues, with the aid of NJBA equipment and/or members.

2. Workshops are intended for the purpose of teaching certain skills and/or completing certain projects, and are subject to the authority of the workshop leader or instructor. Accordingly (as per a vote of the NJBA Board on Jan. 28, 2018.):

- A workshop participant shall work *only* on the project at hand and not on any other projects, *without exception*. (Any NJBA member may attend an NJBA open forge meeting to work on his own project.)
- Every participant of a hands-on workshop will be required to follow the instructions of the workshop leader, especially any instructions pertaining to safety, or he may be ejected.
- A person who has a history of failure to follow instructions may be refused admission to any workshop, at the sole discretion of the workshop leader.



Unofficial Summary of Jan 28 Board Meeting

by Bruce Freeman

Directors Al Mottram, Ben Suhaka, Bruce Freeman, Tom Santomauro, Mark Morrow, Marshall Bienstock and Ryan Amos were in attendance, with Ryan presiding. Ciel Suhaka was also present.

The new sign-in tripod and donation box forged and fabricated by Tom was displayed to the Board. The donations, mostly in $1 and $5 bills, were counted and turned over to Bruce (NJBA Treasurer).

Needed repairs and upgrades to the lightweight forging stations were discussed. Bruce has experimented with air ducts, and, based upon Mark's experience, it was concluded that a simple non-porous cloth duct would probably suffice. Bruce has prepared such a duct, but will hold off testing it till more clement weather prevails. (SS flex ducting was discussed, but the prices found to date are excessive.)

The need was discussed for a check valve for the air duct from the orange blower, but no conclusions were reached. Larry and Bruce will consider designs.

The possibility of NJBA buying ABANA memberships in bulk to resell to our members was discussed, but was tabled for a year or so till the 2020 ABANA conference in Saratoga Springs is closer.

The crane rail sections donated by Dan O'Sullivan have so far not been worked on at all. Larry took one section home to see what he could do to turn this into an anvil.

Ryan has explored using PayPal as a means of making payments to NJBA for workshops, etc. So far the Board is not happy with the conditions PayPal imposes, so has tabled the matter.

The idea to reorganize NJBA as a "forge council" was discussed, but there has been lack of interest either from the Directors or from the membership. Bruce pointed out that the Board can designate any meet to be sponsored or co-sponsored by NJBA. Accordingly, Ben moved and the Board approved designating NJBA as co-sponsor for the Holcombe-Jimison Farmstead Museum's Sunday open forge meetings (1-4 PM, May-Oct.). NJBA members may have to join as members of the Museum ($25/year) or at least pay the daily admissions price ($5) to participate.

Bruce reiterated his need for more help with the Newsletter from the other Directors. It was concluded Bruce will continue to assemble the newsletter and get it printed, as well as purchasing envelopes and postage stamps. Larry will continue to provide material, and will also print the mailing labels and mail them to Marshall. Al (who is keeping the roster) will send the latest roster to Larry for printing the labels. Marshall will handle the mailing -- folding newsletters, stuffing, labeling and stamping, etc. All Directors were requested to submit write-ups of events they attend to Bruce.

Bruce also brought up, once again, the issue of emailed newsletters. Larry pointed out that in the past many folks had slow Internet connections, so an emailed newsletter might take prohibitive time to download, but that is no longer the case.

The printing and mailing of the Newletter is the single greatest fixed expense of NJBA, and dues have not kept up with it, as they haven't been raised in over 20 years. After a discussion, it was decided that NJBA would issue two more newsletters by U.S. mail -- the last two of Volume 22.

Starting with Volume 23, issues will only be emailed, and a member may print his copy himself, if desired. However, for an additional fee of $10 per year, a member in good standing could be sent printed copies of his newsletter. We will solicit volunteers (to be compensated for their expenses) for this task at a future meeting.

Mark reports that his tong-making workshop had only four participants (one cancelled) and only broke even, but the trade-axe workshop had six and made a profit for NJBA. Mark submitted a check for the difference between receipts and his fee plus materials costs. Tom mentioned that the latter workshop was filled exclusively with recent participants from Marshall's open forge meetings, whom Tom had encouraged to attend. Hence, we may still need to enhance our publicity efforts. Mark wants his future workshops labeled "Some experience required."

The next Board meeting was scheduled for Monday, April 29, 7:30 PM, at Marshall's shop.

Al reported the current membership to be 76 persons.

Bruce has been collecting self-nominations to the Board. Three current Directors have opted not to run again this year, but the rest appear on the ballot in this issue.

Bruce reported our bank balance.

Mark suggested an approach to fundraising like that used by the Arkansas group: Raffle a toolbox of quality tools donated by members. Bruce continues to suggest running more workshops, such as:

- Fabrication of gas forges (Mark Morrow's knifesmiths' forge or Dave Hammer's firebrick & steel gas forge).
- Fabrication of coal forges, hoods and blowers.
- Another anvil-repair workshop, possibly including simultaneous DIY rail-anvil workshop.
- Another smithing magician workshop.
- Other tool-making (and take home with you) workshops. (E.g., making polygonal sockets, spade and twist drills, etc.)
- Other instructional workshops. (e.g., sharpening drills, etc., forging a tic-tac-toe set, or whathaveyou.)

Finally, the Board addressed upcoming events, which are listed starting on page 1 of this Newsletter.

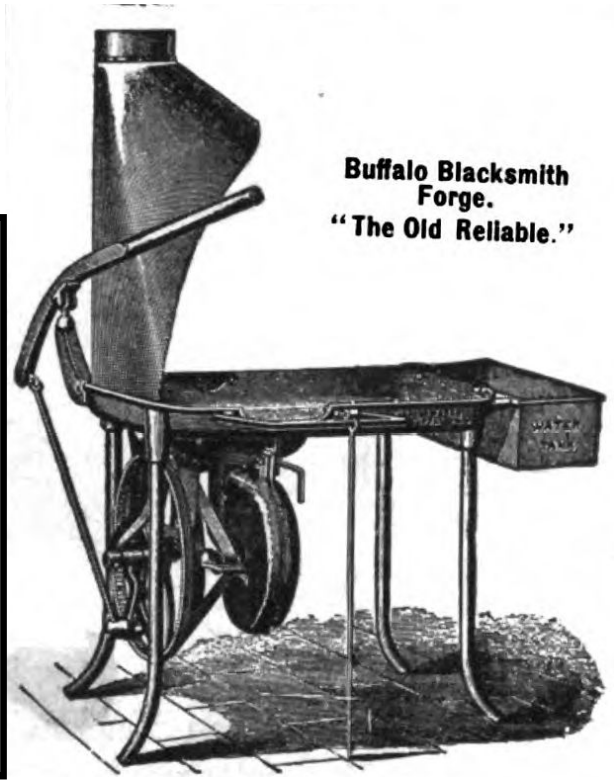
Please Renew NOW
Please Vote NOW
Please Volunteer NOW

See the last page of this Newsletter for the form.

Want to Join the NJBA Board of Directors?

NJBA has an unusual nomination and election process. While you may be nominated by a Director, you may also self-nominate, and the Board may elect new Directors at any time. If you're interested in helping to run NJBA, please email any director (or all of them) and self-nominate. (Be aware that there's a work commitment involved! See the Bylaws on our website for more information.)

While the each Director reserves the right to use any criteria he sees fit in judging whether to vote for you, the criteria typically boil down to whether you've shown that you're willing to work to help run NJBA. Tell us how, when, and where you've participated and helped out in the past. Tell us what you'd like to help with in the future. Give us some understanding of your relevant experience and how those would benefit NJBA. This experience need not be in blacksmithing, though that helps. Writing, photography, Internet, and organizational skills, for a few examples, can be just as valuable to NJBA. If interested, let's hear from you.



2020 ABANA Conference Update

by Rand Condell

(Reprinted from the fall 2018 issue of *Forge and Iron*, the newsletter of the Northeast Blacksmith Association.)

The planning for the 2020 ABANA Conference to be held at the Washington County Fairgrounds near Saratoga Springs, NY, June 3-6, 2020 is well underway. The conference committee consists of Bob Menard, Rand Condell, Bob Valentine, Mark Aspery, Dana Flanders, Dick Sargent, Matt Parkinson, Leigh Morrell.

For those of you that were in Richmond you know that we created quite a buzz about 2020. Many of us wore red tee shirts on which was written "Ask Me About 2020". We had tables with information about Saratoga, Lake George and the Washington County Fairgrounds. A representative of the Sara-toga Tourist Bureau joined us for three days. There is now an ABANA 2020 Facebook account and we have obtained two domains, ABANA2020.com and ABANA2020.org. We have yet to develop our website but should have the site up later in the Fall. *[However, these webpages came up blank on 31 Jan 2019. - ed.]*

The fairgrounds has nearly 200 RV sites and many tent sites. There is also a very rustic bunkhouse on site. *[In case it's not clear from this, there are also many motels within a 10- or 15-mile radius of the fairgrounds.]* There are lots of buildings and demos will be held in these buildings. Vendors and tail gators will also be in covered buildings.

We have more than half of our demonstrators for the conference. The Conference will focus on the seven areas of Blacksmithing: Traditional, Tooling, Art, Power, Knives, Farrier and teaching.

The Adirondack Folk School has an annual Instructor Rendezvous in August where we share ideas, discuss how to improve our blacksmithing program and make tools for the shop. Most of our instructors are involved with planning the 2020 Conference. This year we have invited representatives from all of the regional affiliates to join us. We will spend Friday and Saturday evenings sharing ideas and plans for 2020, and spend Saturday finishing off the 40 pairs of tongs started by the New England Blacksmiths at their June meet. Hopefully we will be able to add to that number. On Sunday we will make a site visit to the Fairgrounds.

The ABANA Board will be coming to the area the first weekend in November to meet with the committee and they too will do a site visit.

Lots of planning has already been done but there is a lot more to do. It requires many hands to have a successful conference. if you would like to help please contact me at: rand.condell@adirondackfolkschool.org.

NJBA Lightweight Vise Stand
This was the prototype. We've since fabricated five more, slightly different.
This is a filler. Had you *submitted material for the NJBA Newsletter, it might have been here!*

Book Review: The Blacksmith's Project Book

by Albin Drzewianowski
Title: *The Blacksmith's Project Book: Intermediate & Advanced Projects from European Masters*
Author: Antonello Rizzo
Translated by: Andrea James Blaho
Publisher: Artisan Ideas, 2018
ISBN: 978-0-9979798-2-4
This is a large format book, 11-1/4" by 9-1/2" wide and 245 pages with hundreds of color pictures and includes a biography of the author.

This is the second book written/edited by Antonello Rizzo and translated from the Italian. The first is *Secrets of the Forge,* published in 2008. This second book is a continuation of that earlier book. Rizzo has based this book on the demonstrations, workshops and fairs that he has attended throughout Europe.

In the preface to the book, the American technical editor, Gerald Franklin, emphasizes that this book is not a beginning level book. It is targeted at intermediate and more advanced blacksmiths. The projects call for a well-equipped shop and, in many cases, lots of tooling.

Additional Online Reviews
Recently this book was sent to us for review, but neither of us has had the time. Therefore I'm including Albin's review (left) from MASA's newsletter, *Hammer Notes*, as well as links to three other reviews:

monicacoyneartistblacksmith.com/shopblog/2018/3/24/book-review-the-blacksmiths-project-book-by-antonello-rizzo

blacksmith.org/the-blacksmiths-project-book-a-review/

amazon.com/Blacksmiths-Project-Book-Intermediate-Advanced/dp/0997979828#customerReviews

- editor

There are 21 chapters in the book. Each chapter in the book is tied to a particular blacksmith (or team of smiths). The first seven chapters pick up where his first book left off: sculptural forging. Then he moves on to other projects which present various advanced blacksmithing techniques. Seven of the projects call for starting with large steel and require a power hammer. A number of the projects require striking. For the knifemakers, Chapter 11 shows the techniques for forging a billhook. Towards the end of the book, the chapters are more focused on process: damascening, metallic fusion, Swiss patina, mokume, and chromatic finishes. He concludes the book with a chapter on restoration.

A number of the projects can be scaled down, for example, Chapter 14: Angle Iron Face, calls stating with 4" x 4" angle iron. I think this sculptural face could be made from smaller angle iron. Regardless of the particular project, I think that there is a lot to learn by studying the various projects.

The last chapter in the book was written by Alessandro Ervas of Italy and is an essay on the restoration of wrought iron. I found this chapter particularly interesting as it points out how the restoration of ironwork is often handled different from the restoration of other types of art, especially in the choice of materials used to perform the restoration. Then he goes on to explain how many common restoration practices actually do more damage that good. Ervas emphasizes the need to understand the difference between modern materials and what he characterizes as "pre-industrial iron".

Ervas repeatedly talks about the need to use processes and materials that are "...carried out with the maximum respect for the original piece." The artisan performing the restoration must balance both the aesthetics and "the restoration ethics" with regard to the piece of iron work.

CONTROLLED HAND FORGING

Forging Right-Angle Bends

By Tal Harris

Photos by Kim Harris

Waxhaw, North Carolina

Lesson #25.

Definition: Forging Two Right-Angle Bends to a Desired Dimension

Intent: The student will learn how to make two right-angle bends with sharp outside corners in square stock, maintaining a small radius on the inside corner, with the corners a prescribed distance apart.

Tools: Basic forging tools: a hammer weighing about 1 1/2 pounds is recommended, steel square, center punch, twisting wrench (just in case).

Material: 1/2" x 1/2" square stock, 30 inches long.

In this lesson we will make two right-angle bends as noted in Figure #1. From the end of the bar that is visible to the outside of the next corner is 5 inches. The measurement from the outside of the first corner to the outside of the second corner is also 5 inches.

Step #1

In this step, you will be marking the bar in preparation to forge the first right-angle bend.

The target of this lesson is not only to form a proper square corner, but to make it in a desired location. Once completed, the measurement from the end of the bar to the outside of the first corner should be 5 inches. Make a heavy center punch mark on the bar 4 3/4 inches from one end. When forming the corner using this mark as a reference, the desired outside dimension will be achieved. This mark must be visible at a yellow heat in order to control the bending and forming of the corner.

Figure 1- The completed forging.

The center punch mark denotes what will become the center of the bend when viewed from the side of the piece. Refer to Figure 1. The small diagonal lines between the inside and outside corners were originally center punch marks that were deformed when the corner was formed.

Step #2

The area that has been marked with a center punch should be heated to a bright yellow. Using water poured from a can, quickly localize the heat to a 2-inch long area, with the center punch mark in the center.

Safety note: *Care should be taken to keep the hand away from the steam generated when localizing the heat.*

With the bar lying perpendicular to the long axis of the anvil and the heated area located just beyond an anvil edge with a minimum of 1/4-inch radius, make an initial 90-degree bend by directing downward hammer blows to the end of the bar. If the bend was properly made, the result should look like Figure 2 when the piece is viewed from the perspective shown. The material should have no twist, have an inside and outside radius, and the center punch mark should be located in the center of the bend. A common error in learning this technique is to make the initial bend too sharp. This almost always results in a shut, or fold, in the inside corner. Twist can be removed by placing the bar in the vise (at an orange heat), appropriately positioning a twisting wrench, and making the necessary corrections.

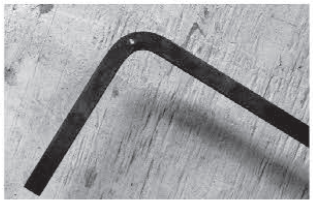


Figure 2.

Step #3

In this step you want to start transforming the bent corner into one that has a small (1/16-inch) inside radius, while the outside corner becomes a sharp 90-degree angle. Heat the corner to a bright yellow by placing the piece in the fire with the corner pointing downward into the center of the fire, and the end you are holding at a 45-degree angle.

Figure 3A.

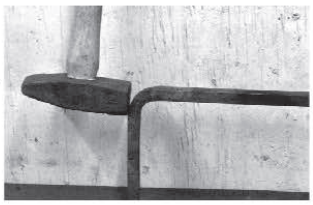


Figure 3B.

Once the metal is at forging temperature, start forming a sharper corner by first hitting the area noted in figure 3A with light, rapid blows, followed by similar hammer blows delivered to the area noted in figure 3B.

It should be stated that the downward blows where the material is backed up by the anvil are more effective than blows delivered towards the hand. Therefore, more blows are required when striking towards the hand. Some references state 4 blows towards the hand for every 3 towards the anvil, but the important point is that the center punch mark remains in the center of the bend while the corner is progressing. Resist the temptation to upset the piece while the corner you are trying to form is against the anvil, as this only results in upsetting the material adjacent to the corner and does little to form the corner itself.

CONTROLLED HAND FORGING

Continue to deliver blows as described above, being careful to keep the areas on either side of the corner straight and free from twist as described previously. Correct these conditions as they are occur, for they will only worsen and make forging the corner more difficult. If possible, make corrections before returning the metal to the fire so that progress, rather than corrections, can be made at the highest temperature when the bar is next removed from the fire. Once the piece has cooled to an orange, it is time to once again heat the piece to a yellow and continue forging until the outside corner is sharp, there is a small inside radius of 1/16-inch, and all material has been forged to its original size of 1/2 x 1/2-inch square. When this has been successfully completed, the piece will look like the representation in figure 3C.

Figure 3C.

It is important to note the resulting dimensions of the bar at this point. The measurement from the end of the bar that is visible to the outside corner is 5 inches. Remember the initial reference center punch mark of the centerline of the corner was made 4 3/4 inches from the end of the bar. Understanding the movement of the material is key to forming these bends to a required dimension.

While the bar is cool, locate the bend for the second corner 4 3/4 inches from the outside corner of the first bend as shown in Figure 3D.

Figure 3D.

Step #4

Take a bright yellow heat and reheating as needed, repeat the process described in Steps 2 & 3. Refer to Figure 4. While forging the corner, the material near the corner upsets– that is, it shortens and therefore becomes larger in cross-section. This can be corrected by forging the stock to its original size, being careful not to reduce the section below its original dimension.

As stated previously, resist the temptation to upset the piece while the corner you are trying to form is against the anvil, as this only results in upsetting the material adjacent to the corner and does little to form the corner itself.

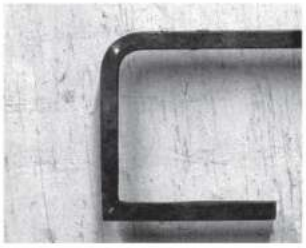


Figure 4.

Once the outside corner has become sharp, make sure that the surrounding material is at its original dimension, the outside corner is sharp, the inside corner has a radius of 1/16-inch, the angle measures 90 degrees when checked with a square, and does not contain any twist.

Allow to cool and check dimensions of the piece. The result should match the dimensions and photograph in Figure 1 at the beginning of the lesson.

Note: When a bar cools it shrinks. Once formed, the measured dimensions will change as the material cools. Allowance for shrinkage is achieved by leaving the dimension longer than the finished dimension. For this scale of work, leaving the dimension 1/16-inch long while the piece is visibly red will result in a cold measurement that is very close to the intended measurement. This degree of accuracy is not always needed, but knowing how to control the work to achieve a desired result is a valuable skill.

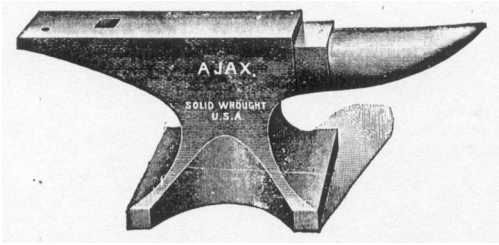
Targets:

The dimensions will meet the requirements of Figure 1.

The material will be free from twist.

All stock will be 1/2" x 1/2" square.

Uses for this technique- Primarily gate and grille frames.

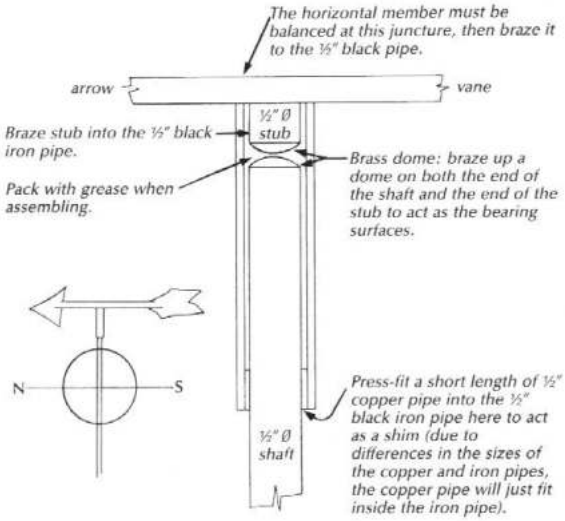


Weathervane Bearing

Doug Hendrickson

Lesterville, Missouri

From The Anvil's Ring, *Vol 14, #1, Summer 1986*



Forging Right-Angle Bends

By Jay Close and the CHF Committee

Photos by Jane Gulden and Jay Close

Charleston, South Carolina

Lesson #26A.

Part One: Forging Two-sided shoulders on the Near Edge of the Anvil

Intent: The student will learn to forge two-sided shoulders on the near edge of the anvil using only the forging hammer to control the location and dimension of the shoulders. This will be a first exercise laying the foundation for a more challenging two-shoulder exercise to follow.

Introduction: Matched two-sided shoulders as in photos 1 and 2 are features of much ironwork. Artifact photos appended show these shoulders on historic hardware collected in Charleston, SC. While such shoulders are effectively created using top and bottom fullers and a striker, or through the use of a spring die or guillotine tool, it is a skill worth pursuing with forging hammer alone. This pays dividends in increased hammer control, and for many projects it is a quick, efficient method. Most learners find that forging matched shoulders on the near edge of the anvil is easier than a similar pair using the far edge. Instruction begins with the easier challenge as shown in Photo 1.

Photo 1.

Photo 2.

Successful completion of these exercises both requires and develops good hand/eye coordination and overall hammer control. At the heart of such control is a relaxed and comfortable stance at the anvil. Smiths tend to adopt one or the other of two effective stances when forging these matched shoulders.

In the first instance, the smith approaches the anvil in a "normal" way with his or her shoulders roughly parallel to the anvil (Photo 3). The workpiece may be held slightly in front of the body. The shaping of a set of shoulders forged on the near edge of the anvil is mostly effected by the bottom edge of the hammer as indicated in Photo 4.

Photo 3.

Photo 4.

The alternate stance positions the smith's shoulders roughly perpendicular to the front edge of the anvil (Photo 5). Here the workpiece is held on the anvil away from the the smith's body but parallel to his or her own shoulders. When working at the near edge of the anvil, the right hand edge of the hammer (shown in Photo 6) matched with the edge of the anvil forms the shoulders.

There are pluses and minuses to both stances, but the work required of the hammer is the same in each.

Photo 5.

Tools Needed:

Basic forging tools only.

Note: This lesson, and the one that follows, are accomplished with your basic forging hammer and the rounded edges of your anvil. The article titled *Safety, Ergonomics, and Shop Layout* by Dan Nauman (*Hammers Blow*, Fall 2002) gives guidance in hammer selection and anvil set-up.

Photo 6.

The learner might also read *Drawing Down-Part One* (*Hammer's Blow*, Winter 2005) for discussion of the face of a general purpose, forging hammer. Although a round-faced hammer like a ball peen may be used in a pinch, a hammer with a square or octagonal face will be most useful. Closeup photos of the author's hammer accompany this lesson.

Material:

1/4" x 1" mild steel cut to approximately 24 inches in length (or any convenient hand-holding length).

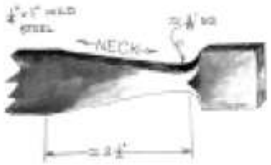


Figure 1.

CONTROLLED HAND FORGING

Figure 1 shows the target shape. Unlike many discussions in this lesson series, target dimensions are less important here than control of the form. Consider for this lesson the accompanying dimensions are suggestions.

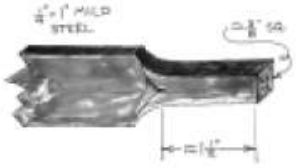


Figure 2.

More important than a particular measurement are forged shoulders opposite each other and in alignment. The shoulders should be sharp and distinct.

The extension created on the end of the bar is square in cross-section, centered along the axis of the bar and it can be allowed to grow thicker than the parent bar dimension of 1/4".

The almost inevitable slight pucker where the shoulders meet the extension should be minimal. The form must be straight and without twist.

Step #1

Cut a length of 1/4" x 1" bar approximately 24 inches long– or any length convenient to hand-hold. (A shorter bar held in well-fitting tongs is also acceptable.)

Heat two or three inches of the end of the bar to a yellow or lightly sparkling heat.

Step #2

Place the bar flat on the near-edge anvil so that a square of material lies on the anvil face as in Photo 7. Use a part of your anvil that has a well-rounded edge.

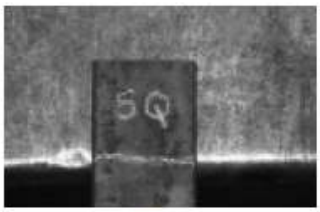


Photo 7.

Then, neither moving the bar forward nor back, rotate it so that it is on edge with the same material supported by the anvil. See Photo 8.

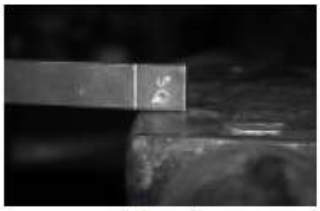


Photo 8.

Tip: A chalk or soapstone mark on the anvil one inch from the edge will also position the bar for this exercise. However, thinking of shape as opposed to dimension is a useful skill to develop. Here is an opportunity to judge ratio and proportion "at heat."

Keep the work-holding hand and arm relaxed and the bar horizontal. Only then will you create the sharpest set of shoulders. Any tendency to lower the holding hand so the anvil corner bites more into the work will result in an angled shoulder.

Step #3

With the target shape well in mind, the first hammer blows must be quick and hard to make full use of the available heat. Ideally, the hammer blows will exactly align with the near edge of the anvil and begin the needed shoulders. However, do not attempt to exactly match the hammer to the anvil edge with the first blow. Rather, approach the target shape through *successive approximation.*

Start with a confident blow near the end of the bar. Take the second blow a little closer to the desired shoulder and the third a little closer still. Creep up on the desired match of the hammer to the anvil edge.

Photo 9.

Photos 9, 10 and 11 show this series of hammer blows.

After three hammer blows (maximum), stop and rotate the bar so the other edge is uppermost. Feel for light contact between the shoulder you started and the rounded edge of the anvil.

Photo 10.

Note: Even hammer blows that were significantly short of matching the anvil edge will begin to make a slight shoulder on the opposite side of the bar (Photo 12). Take advantage of this when repositioning the bar and as a target for your hammer blows.

Photo 11.

Forging Dynamic: For every action there is an opposite and equal reaction. The force of the downward striking hammer causes the anvil in effect to strike up. But while a hammer blow's effect is concentrated in the area of contact between hammer face and workpiece, the anvil makes much broader contact. That is why a hammer blow that is not perfectly aligned with the edge of the anvil can still begin to create a shoulder on the underneath surface of the bar.

Repeat the series of hammer blows on this other vertical edge of the bar. All of this needs to happen very fast and very confidently.

Troubleshooting:

Early and continuous correction is key to success.

If the bar begins to become parallelogram in section, put the long cross-sectional axis vertical and forge it down. See *Controlled Hand Forging "Lesson One: Drawing Out"* by Peter Ross and Doug Wilson for guidance (*Hammer's Blow*, Winter 2003).

Photo 12.

CONTROLLED HAND FORGING

If the bar begins to cup or collapse in one direction, this must be corrected by flattening before proceeding. Persisting with a bar that has started to cup in that way will only make the problem worse and increasingly hard to correct.

Photo 13.

Another related problem is a "pucker" or fold developing along the length of the bar. Photo 13 shows this clearly. While almost unavoidable to a small extent at the shoulder transition, if uncorrected it can become a lengthy cold shut.

If this pucker or cold shut plagues you, it is a good indication that you are working too cold and/or not hitting hard enough.

Forging Dynamic: When the bar is cool or the hammer blow light, the shaping force of the hammer is not transmitted into the middle of the bar. The shaping is, therefore, superficial and limited to the bar surface. The metal will always move in the path of least resistance. In the case of a bar on edge, as in this exercise, the path of least resistance is to the sides: the edges flare out leaving the shape of the middle of the bar relatively unaffected. The result will be a pucker or fold.

Step #4

High heat and hard hammer blows are so important to the success of this exercise, little is gained working below an orange heat. When the bar has reached an orange heat, get it back in the fire.

Photo 14.

Likely a second or third heat will be necessary to complete this exercise. Start with the same yellow or lightly sparking heat. You should have the beginnings of shoulders on both edges of the bar. See Photo 14.

The bottom shoulder will allow you to accurately position the bar on the edge of anvil; the upper shoulder will make a visual reference for your sequence of hammer blows. You may even be able to start closer to the shoulder and more confidently place the hammer face in relation to the anvil edge.

Again, hit hard and with intent, but take no more than three blows before rotating the bar to address the opposite edge.

Troubleshooting:

By now your shoulders will be definite enough that a new problem may develop: the extension may not be centered on the axis of the bar. This is usually the result of not working both of the edges equally.

This is corrected by placing the shallow shoulder down and against the edge of the anvil as in Photo 15. Keep the bar horizontal. Then, hit a blow on the upper shoulder to drive the extension back on center.

Photo 15.

Sometimes a misplaced blow or a bar not held touching the edge of the anvil will result in shoulders of equal depth but one forward of the other. This is a more challenging correction. See Photo 16.

Photo 16.

The short shoulder must be reset farther back to match the other. First, blunt the sharp corner of the shoulder (Photo 17). This will help avoid a cold shut as the metal moves into the path of least resistance.

Photo 17.

Forging Dynamic: When struck with a hammer, the heated bar will move in the path of least resistance. A sharp shoulder that is struck vertically with a hammer will move forward and begin to fold over. Low heats and/or light hammer blows aggravate this effect. If the movement is not anticipated or not corrected, a cold shut may result.

Photo 18.

Next, place that shoulder down on the edge as in Photo 18. Hit one corrective blow. This will produce a shallow mark, the beginnings of a shoulder at an accurate location opposite its mate on the other edge of the bar.

Rotate the bar so the shallow shoulder mark is uppermost and work progressively into the newly positioned shoulder.

Targets:

Forge the shape including all corrections in three heats. Photo 1 and the drawing illustrate the target shape. Pay particular attention to the following points:

1. The extension must be centered visually on the centerline of the parent bar.

2. Any pucker at the base of the shoulders is not to extend more than about 1/2 inch up the extension.

3. Shoulders are of the same depth and positioned the same distance from the end of the extension.

4. The cross-section of extension is square– neither rectangular nor a parallelogram. Outside calipers can help determine this.

5. The form is visually straight and without twist.

Forging Two-Sided Shoulders

By Jay Close and the CHF Committee

Photos by Jane Gulden and Jay Close

Charleston, South Carolina

Lesson #26B.

Part Two: Forging Two-sided Shoulders on the Far Edge of the Anvil

Editors Note: In the last issue of the Hammer's Blow, *the first part of this lesson was published with an incorrect headline. The editor regrets the error.*

Intent: The student will learn to forge two-sided shoulders on the far, rounded edge of the anvil, using only the forging hammer to control the location and dimension of the shoulders.

Introduction: Forging two-sided shoulders on the far edge of the anvil is challenging. Where the hammer is being placed on the work is often obscured by the hammer head itself and one must hold the bar at an increasing angle to the anvil face as the shouldering progresses. Figure 2 below shows the desired final form: an approximate square of material centered on a tapered "neck." While the sketch below includes suggested dimensions, as in the previous exercise, controlling the form is more important than meeting a set of prescribed measurements.

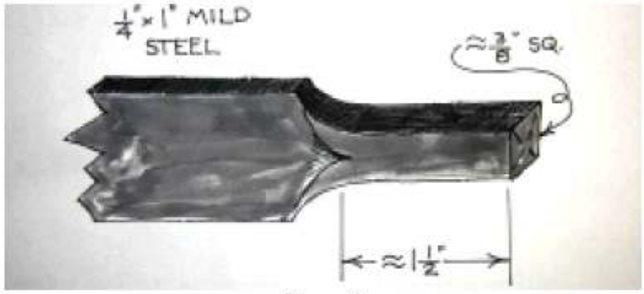


Figure 2.

As in the earlier exercise, smiths tend to be partial to a particular stance and presentation of the workpiece to the hammer and anvil. Either can be effective.

Tools Needed:

Basic forging tools only. See references in Part One concerning the general forging hammer, its selection and shape, and anvil set up.

Material

1/4" x 1" mild steel, cut to approximately 24" in length (or any convenient hand-holding size). A shorter length held in well-fitting tongs is also acceptable.

Step #1

Heat two or three inches of the end of the bar to a yellow or lightly sparking heat. Place the flat of the heated bar on the anvil in an area with a rounded edge. A square of material 1-inch by 1-inch should project off the far edge of the anvil surface (See Photo 20).

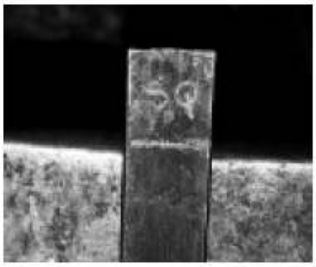


Photo 20.

Keep the bar horizontal as you rotate it on edge. Shift neither forward nor back. One inch of the stock should remain off the anvil as in Photo 21.

Photo 21.

The first hammer blows must come confidently: three blows, each one progressively closer to the desired alignment with the anvil edge– better to be short of the perfect alignment than hit too far forward.

Depending on which forging stance you decide to use, different parts of the hammer head do most of the shaping of the shoulders. This is parallel to your experience in the first lesson.

After three blows (no more!), rotate the bar so the edge once against the anvil is now uppermost. Reposition the workpiece so that the desired one-inch square of material is still off the anvil as in Photo 22. Adjust the angle of the bar so the just-forged edge is in contact with the anvil face.

Take two or three more blows working up to the edge of the anvil, then rotate the bar and work up to the other shoulder of the bar again. This is the same rhythm, forging and rotating, that you practiced in Part One.

Photo 22.

At an orange heat, the bar goes back in the fire. Working hot minimizes problems.

Note: As the shoulders develop, you must angle the bar on the anvil and cant the hammer into the shoulder. Have the tapered neck fully supported by the anvil at all times.

Step #2

Reheat the bar to a yellow heat and continue to draw down the neck. Hit hard but aim your first hammer blow confidently away from the edge of the anvil. The second and third hammer blow will move progressively closer to accurate alignment with the far rounded edge of the anvil.

Take no more than three hammer blows before rotating the bar, so the edge once against the anvil is now uppermost. Achieve the desired form by successive approximation.

CONTROLLED HAND FORGING

Troubleshooting

Comments made in reference to the first exercise apply here. The sooner a problem is corrected, the better.

Watch for hint of a fold or pucker developing in the neck where it transitions into the square of material on the end. If one should begin, flatten it out before going further.

An off-center mass on the end of the bar (Photo 23) is adjusted by placing the shallow shoulder on the rounded edge of the anvil. Then, apply gentle pulling force to hold the shoulder tight to the anvil edge, and with a sharp blow as shown in Photo 24, drive the mass on center. In effect, you are creating a shearing force focused at the transition where neck meets square to push the square into alignment. The shoulder must be in contact with the edge of the anvil for this to be effective.

Photo 23.

Shoulders that are different distances from the end of the bar can be improved by positioning the long shoulder as in Photo 25. A hammer blow directed through the diagonal of the bar by striking the upper corner will drive the shoulder forward into better relationship with its partner.

Often it helps to cool the corner that is to receive the corrective hammer blow.

If the mass on the neck is centered, but the neck itself is not in alignment with the axis of the bar, as in Photo 26, this too can be corrected. At a light orange heat, place the "neck" with the shallower angle uppermost as shown in Photo 27. A single blow should drive it on center.

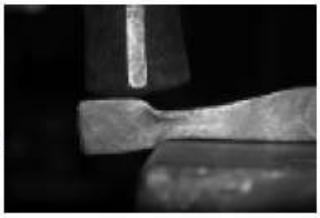


Photo 24.

Photo 25.

Targets

Forge the shape, including all corrections, in four heats.

Work toward a shape resembling Figure Two.

Pay attention to the following points:

1. The neck is evenly tapered, straight sided and centered on the axis of the bar.

2. The neck should be square in section at the point of transition into the square on the end. Expect the neck to grow thicker than the parent bar. This is okay for this exercise and often desirable in a finished forging, too.

3. The square on the end is approximately one inch square.

4. The square on the end is centered on the neck.

5. The shoulders are even depth.

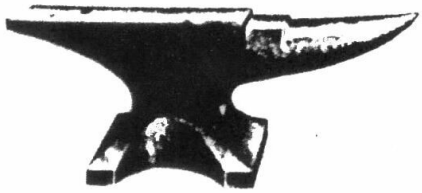
6. The form is straight and without twist.

7. There is little or no hint of a fold along the neck.

Acknowledgments: Thanks to the Controlled Hand Forging Committee for many useful comments on this lesson. Thanks to Jane Gulden for taking a Saturday morning to help with the photography. And thanks to the American College of the Building Arts (www.buildingartscollege.us) for supporting my involvement in this lesson series.

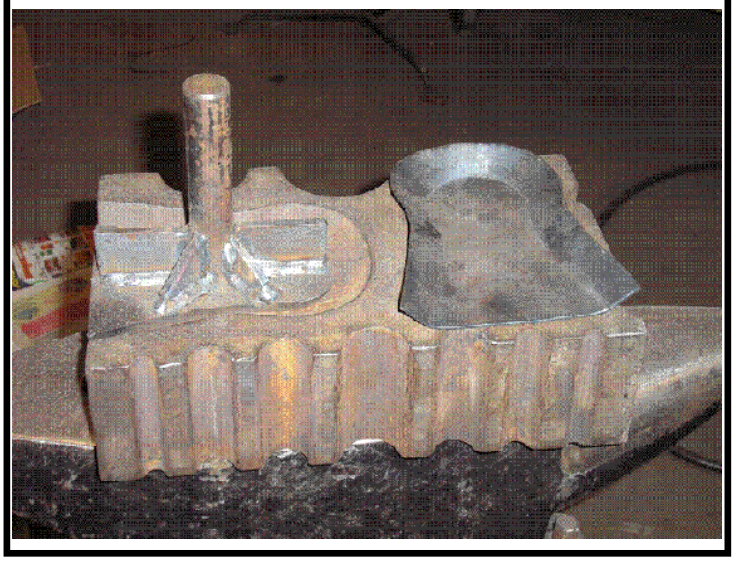
Photo 26.

Photo 27.



Shovel Form to fit a Swage Block

This photo is from *From* the newsletter of the New England Blacksmiths, V.30, No.2, which can be found online at newenglandblacksmiths.org/news-letters/



Casement Window Latch

by Ian Walker


Fig. 1

After completing the door hardware for the hostel in Deer Isle, Maine, I began design work on the casement window latches. The hostel (Fig. 1) is a replica of First Period houses north of Boston so the hostel owner/builder, Dennis Carter, and I visited six houses to examine hardware, including the Parson Capen house in Topsfield and the Ironmaster's house, Saugus Ironworks.

Both the Parson Capen house(1683) and the Ironmaster's house (circa 1680) were restored in the early 1900s. A pre-restoration photo of the Capen house shows double-hung windows, not casement windows, so the present day window hardware is probably not original. I've been unable to ascertain whether the restoration latches on either house are true to the original latches.


Fig. 2

The window latches in the two houses are the same style (Fig. 2). The latch is attached to a base plate by a tenon. I surmise that the completed latch was fastened to the window, the window pulled shut, the latch turned to strike the jamb and a vertical slot chiseled into the jamb.

The hostel window latches need to be functional and user-friendly for guests. For this reason, Dennis and I thought long and hard before choosing the unfamiliar (to the public) ring latch for the front door (see the Fall 2009 newsletter, p. 7).

Design Issues

The window latch design in the Massachusetts houses looked straight forward, but a close examination revealed problems. Here are the problems and our solutions.

Problem: Excessive wear to the window jamb, and the slot in the jamb, where the steel latch strikes and rubs against wood.
Solution: For the hostel, add latch strike plates with the leading edges mounted flush with the front of the window jambs.

Problem: Many windows do not close all the way, as evidenced by the wear in the jamb slots and the hooks and eyes installed to help close them tight.
Solution: Install two latches on each window. Add strike plates with angled slots so that as the latch is turned it pulls the window closed. Also, make the latch base plates from 3/16-inch thick steel, thus increasing the bearing surface for the tenons and stability of the latch ring.

Problem: Restoration latches in the Mass. houses were attached with clenched nails, and in some cases, small hex head lag screws. Clench nails were traditional, and permanent, as in "dead as a doornail." Screw threads were laboriously filed by hand in the seventeenth century and were too expensive to have been used to attach house hardware. On the other hand, a skilled nail-maker could forge a nail in less than a minute.
Solution: Despite their not being authentic, screws were our choice. Screws are readily available and forgiving, permitting hardware to be precisely placed and adjusted or removed as needed.

Our solutions complicated the work. Not only did we double the number of latches, but the hostel latches were more exacting to make: I couldn't just forge the latches "close enough" and give them to Dennis to install and chisel slots in the jams. Because the strike plates were installed first (to the edge of the window jambs), the twenty four latches had to be forged and filed to precisely engage the slots in the jamb plates. In addition, Dennis made the windows from salvaged cypress boards and old glass, and while he did an excellent job, dimension variations in the hand-made windows necessitated additional custom work on each latch.

Forging the latches.

Begin with a 1/2 x 1/4-inch bar a couple of feet long (for a handle). See Figs. 3 and 4 for the forging sequence.


Fig. 3

Upset the end of the bar to gain mass for the shoulder that bears of the back plate. The bar is then drawn out square, then forged round for a length of three inches and less than 1/4-inch in diameter. Note that the offsets at the ends of the round section are on opposite edges.

After forging a number of these, you get a feel for how much of the original bar is needed to produce the drawn-out section. Precision isn't important, but uniformity is, given that two latches are installed on each window close enough for the eye to pick up size differences in the latches.


Fig. 4

To achieve inconspicuous forge welds, taper the scarfs to a feather edge. The Capen house latches are more successful in this than the latches in the Ironmaster's house.

Note that the scarfs are on the opposite sides of the forging and that the width of the scarf conforms to the width of the material to which it will be forge welded -- the scarf is widest that overlaps the thickened section at the base of the latch. I made two tools -- one for each scarf pair -- that when placed over the hot bar, and struck using my treadle hammer, formed each scarf pair in one heat. A hand hammer would suffice. With the scarfs complete, the ring is formed and the scarfs aligned in preparation for forge welding.

The ring has a smaller cross-section than the parts being welded so I fluxed the entire ring to reduce the chances that the ring would overheat and burn.

I cut each welded ring from its "handle," and holding the ring in a pair of tongs I made for that purpose, forged the 1/4 inch diameter tenon that attaches the latch to the base plate and the "nose" that engages the slotted strike plate.

After forming the tenons in a "blacksmith's helper" with tenoning dies, I chucked a counterbore into my drill press, and using the forged tenon as a pilot, milled the tenon and its shoulders.

Counterboring the tenon shoulders and filing the underside of the "nose" permitted me to achieve the precision required for the closed latch to engage the top of the inclined slots in the strike plates.

The back side of the hole for the tenon were slightly countersunk. I inserted the tenon into the base plate and used an oxyacetylene torch as a heat source to aid in peening the tenon ends. I rotated the latch and the base plate as they cooled so that the latch would turn freely.


Fig. 5

Finally, I forged a dozen long hooks, or stays, to keep the windows open in a fixed position so that they would not blow in the wind. Figure 5 shows two latches and a hook on a hostel window.

Postscript

Readers who have spent countless hours at their anvils won't be surprised that in the process of perfecing the latch I tossed scores of rejects under the bench -- way under the bench. Thanks to the pile of rejects, and the 24 completed latches, I have the latch "down."

Mastering something new gives me confidence and enthusiasm for the next challenge. If you are a beginning blacksmith, and struggling, I hope it makes your day to know that you aren't alone.

Ian Walker, Stonington, ME

From the newsletter of the New England Blacksmiths, V.30, No. 1, p.17.

New Jersey Blacksmith Association
P.O. Box 224
Farmingdale, NJ 07727-9998

NJBA Membership Renewal, Ballot, and Volunteers' List

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Vote for each Director by checking the box by his name.

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