

# the Newsletter

of the Blacksmiths' Guild of the Potomac

Vol. XXV No. 6

Artist Blacksmiths' Association of North America



Some of the nearly 40 in attendance at the first ever 25<sup>th</sup> anniversary celebration of the creation of the Blacksmith's Guild of the Potomac Photo by Roger Amidon



First row of trucks at Jeff Symanski's truck farm. Jeff and his wife did a wonderful job hosting the 25<sup>th</sup> anniversary celebration Photo by Roger Amidon

November/December 2003

an affiliate of ABANA:

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# The Blacksmiths' Guild of the Potomac, Inc.

## 2003 Board of Directors

### President

\*George Anderton (2003)  
5325 Ringold Place  
Springfield VA 22151  
703-321-9737

### Vice-President

\*Chris Worsley (2004)  
4203 Javins Drive  
Alexandria VA 22310  
703-960-9030

### Treasurer

\*Ken Zastrow (2003)  
12800 Hammonton Rd  
Silver Spring MD 20904  
301-622-0897

### Secretary

\*Keith Kuck (2004)  
5310 Nutting Drive  
Springfield VA 22151  
703-321-8109

\*Bill Wojcik (2004)  
4116 Kingchase Lane  
The Plains VA 20198  
540-253-5121

Pat McGuire (2005)  
1102 Shannon Pl  
Herndon Va 20170-3506  
703-437-9034

Phil Heath (2005)  
4600 S Four Mile Run Dr  
Arlington VA 22204  
703-671-3134

Fay LeCompte (2003)  
1016A East Main St.  
Luray VA 22835

Lenny Mills (2005)  
3407 Aberdeen St  
Suitland MD 20746-3104  
301-423-4938

**Call the HOTLINE at  
703-527-0409** for  
the latest news about  
Guild events.

\*Member of the Executive Committee

## Committee Chairmen

Building	Ross Sullivan	540-775-2067
Claude Moore Park Corporation	Pat McGuire	703-437-9034
Demonstrations	Fay LeCompte	540-743-1812
Meeting Raffle	Jan Kochansky	301-937-6538
Hospitality	Tom Coker	301-942-8573
Hotline	Ed Jackson	410-549-2829
Library	Tug Tuggle	304-876-0909
Membership	Steve Crist	703-754-9678
Newsletter	Ken Zastrow	301-622-0897
Scholarships	George McConnell	703-620-6454
	Tug Tuggle	304-876-0909

**Newsletter email:** [bgop.editor@verizon.net](mailto:bgop.editor@verizon.net)

## BGOP MEETINGS

Guild meetings are held on the first and third Fridays of each month at 7:30 P.M. at the Gulf Branch Nature Center, 3608 North Military Road, Arlington VA 22207. Meetings are usually held in the Guild's shop which is located about 50 yards past the Nature Center building on the wooded path. Occasional Friday meetings with a speaker or video are held in the Nature Center auditorium. Call the HOTLINE for updates on meetings and event.

## Scholarship Applications

Please send scholarship applications to Tug Tuggle  
519 Morning Calm Lane, Harpers Ferry, WV 25425.

## Shop Rules And Etiquette

The Guild shop is available for use by members whenever the Nature Center park is open. Shop is locked, so call Shopmaster or a Board member for access. Follow all safety rules. Record number of visitors on log sheet near door.

Please observe the following rules and etiquette:

- ◆ Bring safety glasses and wear them. Work in a safe manner at all times.
- ◆ Clean the shop **before** you start to work.
- ◆ Empty firepots and dump ash gate after each use to minimize corrosion.
- ◆ Dump ashes in the ash dump outside, at the side of the shop.
- ◆ Place tools back in their proper places.
- ◆ Dress bar ends which you have cut, to be ready for the next user.
- ◆ Clean the shop before you leave, and carry out trash which you create.
- ◆ Always turn out the lights and lock up when leaving.
- ◆ Bring your own material for personal projects. Shop stock is for learning and practice.
- ◆ No alcoholic beverages on park property.

The Newsletter is mailed to members six times a year. Initial membership is \$30 or three years for \$60. Renewals are \$20 or three years for \$55. Life memberships are \$300. Membership applications and renewals may be sent to the treasurer/membership chairman, Ken Zastrow, check payable to BGOP.

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## Presidents message

Safety first, wear your safety glasses. It only takes a few seconds to put them on and prevent a lifetime of blindness.

It is time again to start thinking about elections for the Board of Directors. Ken Zastrow, Fay LeCompte and myself are all at the end of our terms for the Board. We will start accepting nominations at the meeting on September 5, 2003 and they will close the last meeting in October. Look around and see if there is anybody you would like to see on the Board and nominate them. We will be asking for a short statement to go in the newsletter.

Elections for the board of directors are coming up. Nominations will be opened at the next meeting on October 17<sup>th</sup>. If you are interested in running for the board tell someone and have him or her nominate you or nominate yourself. Find out who is running and vote. This is your Guild don't just let somebody else make all the decisions, your opinion is important.

The first ever-25th anniversary celebration of the creation of the Blacksmith's Guild of the Potomac is now over. I think it was a success. I know I had a lot of fun. We had about 40 people come out to Jeff Symanski's truck farm. I hope someday to have a shop as big as his. There was lots of good food and company. Open forges for people to work on. Several people made some stuff and it was all very interesting. It was also a good opportunity to ask questions and find out new ways to do things. There was also some good tailgating going on as well. The only things the Guild had left to sell were one hay knife (\$5) and one leg vice (\$50). The iron in the hat went very well. Everybody got something to take home that was different from what they brought. I hope to see some if it made into things that are brought in to the next couple of meetings. If you didn't get to go, take heart I am going to try to get the rest of the Board to agree to have a meeting once a year at some away location in the late fall as a regular part of our calendar of events.

George Anderton

## Board Member Elections

Three positions on the BGOP Board of Directors come up for election at the annual meeting in December of each year.

Terms expiring this year include George Anderton, Ken Zastrow and Fay LeCompte.

George Anderton has excepted nomination to run again in the coming election.

Additional nominations were made for Roger Amidon, Mike Briskin and Tim Hinkel.

## The 2003 Annual Meeting and Potluck Supper

of the BGOP will be held on December 5, 2003, at the Church of the Covenant, 2666 North Military Road, Arlington, about a mile south of Gulf Branch, and on the same side of the road. This is the same place as last year. Setup is at 7:00 and the festivities start at 7:30.

Please call Jan Kochansky, at 301-937-6538 to sign up and let us know how many will be coming. The usual drill applies: those who sign up early get to choose what to bring; those who do so later may get a more restricted choice. There will also be signup sheets at the next two shop meetings. As usual, the Guild will supply plates, utensils, etc.

Please bring items for the door prize selection. These may be of general interest, or of the ferrous/blacksmith persuasion. If they are wrapped (preferably), please indicate which category the item falls in. Handmade is always preferable, but in any case should be significant (no Dollar Store stuff). There will also be the usual ornament exchange.

## Blacksmith Journal

Correction

The article on Forge welding in the BGOP May/June 03 issue on page 18 was originally published in the August 1990 issue of the Blacksmith Journal.

<b>Events and Meetings</b>	
Nov 7	Bracelets—Fay LeCompte
Nov 21	Archway—Phil Heath
Dec 5	Christmas Dinner and annual meeting
Jan 2	Contest— rules to be announced later
Jan 16	Fixing forging errors—Connie Badowski
Jan 30	Board Meeting
Feb 6	Copper and Non-ferrous work—Chris Worsley and Connie Badowski
Feb 20	Video night and open forge
Mar 5	Thumb Latch—George Anderton
Mar 19	How to do a Demo and Double striking
Apr 2	Spring Fling preparation
Apr 16	open forge and spring fling setup
April 17,18	Spring Fling at the Fairfax Wildlife Club

**BILL GICHNER RECEIVES THE ASKINS  
ACHIEVEMENT AWARD  
at the  
INTERNATIONAL PRESERVATION  
TRADES WORKSHOP**

Bill Gichner received the ASKINS ACHIEVEMENT AWARD from the preservation trades network at their annual workshop on October 9, 2003. The award was presented during their social banquet and auction Thursday night 9 October 2003 at the Blandair Farm in Columbia, Maryland.

The award is named in honor Jim Askins the founder of the National Park Service Preservation Training Center. The award is given in recognition of outstanding contributions and accomplishments in the promotion, education, and application of preservation trade skills.

### New members

- |      |  |     |
|------|--|-----|
| #656 | Mora Larson<br>2117 Great Falls St Apt 32<br>Falls Church VA 22043<br>H 703-532-2770                   | '03 |
| #657 | David Hinman Family<br>1761 Shepherd St NW<br>Washington DC 20011<br>E-mail: rhenhinm@starpower.com    | '03 |
| #658 | Chad Johnson      ABANA member<br>PO Box 103<br>Patterson NC 28661<br>H 828-754-1261<br>W 828-302-2383 | '03 |
| #659 | Mark Ummen<br>8605 Kerry Ln<br>Springfield VA 22152<br>H 703-913-3259<br>W 703-704-9816                | '03 |
| #660 | David Black<br>2628 Garfield St NW<br>Washington DC 20008<br>H 202-234-5918                            | '03 |
| #661 | Kenneth G Duncan<br>1527 Inlet Ct<br>Reston VA 20190<br>H 703-904-9878                                 | '03 |
| #662 | Samuel F Duncan Jr<br>2110 Hanover St<br>Silver Spring MD 20910  | '03 |
| #663 | Valerie Kritter<br>1301 Ware St<br>Vienna VA 22180   | '03 |
| #664 | Pamela H. Roth<br>1115 Lamont St NW<br>Washington DC 20010   | '03 |

### Welcome back

- |      |   |     |
|------|---|-----|
| #420 | Caroline S Qualls<br>144 W Patrick St Apt 5<br>Frederick MD 21701 | '03 |
|------|---|-----|

### Renewals

- |      |                   |     |
|------|-------------------|-----|
| #357 | William A. Wojcik | '03 |
| #572 | John Parlett      | '06 |

## **Annual All Blacksmiths Christmas Show in Derwood Maryland, November 1<sup>st</sup> & 2<sup>nd</sup>**

It was a beautiful day – the best weather we’ve had for 8 years – but so beautiful the crowds stayed home to rake leaves. Past years have included wind and rain and hail and even required anchoring the tent with an anvil, so the sunshine was a welcome guest. I’m mortified that I can’t pull up a complete list of blacksmiths, but a partial list includes Bob and Janet Morris (organizers of the event), Ken and Nancy Zastrow, Roger and Lori Amidon, Tom & Bev Coker, Fay LeCompte, Nellene Smith, Bill Wojcik, Connie Badowski, Albin Drzewianowski, John Larson, Lenny Mills, and the van Alstine clan. Dave Hutchison even made the drive over from the eastern shore. What the crowd lacked in numbers it made up in enthusiasm, and we had lots of good questions and compliments.

Connie Badowski

### **Guild Meeting – Friday November 7, 2003**

A big turnout for the first cold night of the year. A lengthy business meeting covered the Derwood show, wedding stories and the soon-to-be-launched BGOP website, then the floor was turned over to Fay LeCompte who demonstrated three bracelets. The first was a simple synclastic band of chrome plated steel. Fay started by gently doming the ends in a rivet set/cup stake, then continued sinking the dome through the middle in a channel-shaped swage he had made. Once the whole piece was domed he curved it around a bracelet mandrel, leaving just enough space between the ends to slip an arm through. Fay’s biggest tip of the evening was that the curve on each corner of the mandrel is not the same, so best results will be obtained by flipping the bracelet around to work both ends on the same spot on the stake. The other bracelets were made from cold-rolled 3/16” square stock, twisted in the middle but each with different end treatments. Fay prefers a Hans Peot-design twisting wrench with parallel jaws as it allows for fast and easy grip and twist. He did his twisting hot, but also showed that the cold-rolled was strong enough to twist cold (and twisted more evenly when cold). A short discussion of twisting non-ferrous followed, which Fay also does cold but chucked into a drill to ensure smooth and even twisting. Close attention is needed when twisting cold to avoid over-stressing and breaking the metal. The second biggest tip of the evening was to soften the hard edges of the twist inside the bracelet so the wearer is not wounded. This can be done by flattening the inside twist against the mandrel (using a wooden hammer so you don’t flatten the outside twist) or by sanding the inside after you’re done. Several members made bracelets from extra stock Fay brought, then we moved on to iron-in-the-hat and snacks. Ed Jackson’s homemade cookies were – as always – deeply appreciated and quickly consumed.

Bill Wojcik and Connie Badowski

## **MONTGOMERY COUNTY FAIR DEMONSTRATIONS**

The area blacksmiths demonstrated at the Montgomery County Fair again this year and wow did we have a great time. The blacksmiths demonstrate at the Old Timers section and this year the Old Timers began construction of a new building to house some old time equipment in a permanent exhibit. The building is designed to represent an old mill and will be constructed using the old post and beam method. The blacksmiths were involved all week in making the hardware for the building. We were making hinges, door pulls, door locks, cane bolts and nails. Three forging stations were set up Friday morning and we began working that afternoon. A 4<sup>th</sup> forging station for making nails was set up on Saturday when Dave and Jeremiah Murphy came in with a nail anvil. The nail anvil was a big hit with the old timers and the public. There was always a crowd standing around watching some one sitting at a stump-making nail after nail. Actually a crowd formed around each of the forging stations because they wanted to see the different thing that were being made. The enthusiasm of the smiths with their chatter back and forth and with their talking and informing the visitors about what went into making things that they could see would be used in the building was the biggest draw of all. We worked from 10 in the morning until 8 at night for 9 days and never had less than 3 smiths working at a time. Can you imagine- going to lunch and coming to find 5 smiths trying to work at three anvils and talk to the public at the same time? Every smith that came to work stayed longer than they had planned to stay and came back again when they had only planned to come for one day. I gave out more one-day passes and one-week passes than any other activity. As a matter of fact- I had to get some extra passes from other chairman that had not used all of theirs. We had a great time. Everyone enjoyed the work, camaraderie, and socialization. The Fair board members agreed that the blacksmith demonstration was one of the best shows at the fair and they hope that we will return for many more years. I tried to keep a list of the attendees so they could be thanked in the newsletter by name. If I left any one out please accept my apology for not keeping proper notes. A heart felt thanks to the following people, Randy Unger- a wonderful smith and a great addition to the membership of BGOP, Jeremiah Murphy, Gregg Morris, Dave Murphy, Randall Morris, Brittany Morris, Jan Kochansky, Charlie Perticar, Dick Smith, Ed Jackson, John Laird, Bob Ouellette, Ken Zastrow, Lennie Mills, Terry Fisher, Al Anderson, Cooper Anderson, Eric Anderson, Ben Bovee, Bev. Coker, Tom Coker, Mark Schuknecht, Bill Allen, Albin Drzewianowski, Bob Nagle, Robert Wright, Moreen Sordillo, Pat McGuire, Jeff Freeze, Susan Fonseca, Nancy Zastrow and Janet Morris. The last comment, both Saturday and Sunday afternoon we experienced a large downpour and not one forge stopped long enough for the fire to go out. Did we have fun or not? Thanks again everyone.

Bob Morris

# Adventures in Day Camp

Better Known as the

**John C. Campbell Folk School**

by: **Lance Davis**

I started packing for my 'Blacksmithing' class on a balmy, 65 degree Friday morning. With time to spare, I replaced the brakes on the car and changed the aggressive snow tires for the softer-riding 'summer' ones. After all, it was the end of March, and spring had officially arrived. Saturday afternoon, I headed south. By Sunday noon, I was driving through four inches of a blizzard snowstorm - the one that Pennsylvanian's call, 'the onion snow.' So much for putting the snow tires away!

I registered with the Folk School, and sat through the student orientation, while that 'onion' snow lingered outside. Luckily, not much of that snow 'stook' (that's a Pennsylvania word). The 'blacksmithing' class trod to the Francis Whitaker Blacksmith Studio for our introduction tour. What a studio! "Mommy, can I have one like this at home, please?" With twelve forging stations to compliment the instructor's demonstration area, four power hammers, a tool room generously equipped - a coal shed, and a steel shed, my mouth watered at the sight. The class consisted of 12 students; one woman, two girls, and nine anxious men waiting to get started the next morning.

Not only did we have a woman instructor, but also a woman assistant. Roberta Elliott was trained as a farrier before she decided to become an artist/blacksmith in 1980. A small, petite woman, Roberta can hammer with the best of men. She has won many awards for her work and has demonstrated for many groups in the Midwest and in the East. Her portfolio consisted of items for every room of the house and garden. Roberta's assistant, R. J. Hadle, was called upon to help Roberta with students whose talents ranged from novice to

journeyman. R.J. is a trained blacksmith, familiar with the school and facility.

Monday morning at 9 sharp, in 40 degree, sunny weather, Roberta gave the class a fast lesson on starting and maintaining a fire. She quickly demonstrated "s" hooks with 1/4" round and 1/4" square stock, using tapers and twists - geared especially for those novice students. After lunch, Roberta demonstrated a plant hanger using 3/8" square stock, on the diamond. After dinner, the studio was open for students to 'do your own thing.'

Tuesday, warming up to a sunny, 50 degrees outside, our mission was to make a pair of tongs. We started with 7 inches of 3/8" x 3/4" stock. Our introduction to the power hammer (which the studio has four) was to draw out the handles of the tongs. Each power hammer operated to a different touch. Some students were successful, and some students started over. The next project was to upset the end of a 3/8" rod, round it out, and swedge it into a bowl - now we had a flux spoon for tomorrow's introduction to forge welding.

A perfect, sunny Wednesday morning, now at 60 degrees, was devoted to making a handle for a poker. Roberta demonstrated how to forge weld the tips of three 3/16" rods, then to twist and bend the bundle to make the handle. We scarfed the ends to weld onto a 3/8" rod. The rod's other end was bent back upon itself, forge welded together, then cut. Both ends were tapered and bent into our own design for the poker. Roberta's technique for forge welding was simple - as she used her own 'special' flux, a mixture of 1/2 rust to 1/2 roach powder. What a difference in welding! It put borax to shame! After dinner, many students went back to the studio where we made another handle for tomorrow's shovel project.

Our blank sheet steel was waiting in the warm, 65 degree sun on Thursday morning. We used the Beverly Shear to shape the shovel. Using a swedge, we molded the steel into shape, and attached the handle

with rivets. We now had both shovel and poker. Roberta showed us how to blunt point a  $\frac{3}{8}$ " round end, draw out the rod with the power hammer just below the bulb, flatten the point, bend in half, reopen, and 'poof' we had a leaf. R. J. later demonstrated another technique for a different style leaf and showed us how to do a 'loop-'de-loop.' The final demonstration for the day was forge welding four squares at both ends, twist and untwist to make a basket handle. These could be used as our shovel or poker ends, but many students just forge welded the basket handle to two hooks, making a distinctive hanger.

Friday morning (with 70 degree, sunny weather) was devoted to finishing our projects, cleaning up the forging station, and calculating the costs of the materials we used for the week. We were given 'diplomas' and hauled our finished crafts to the center hall to show other students of different arts.

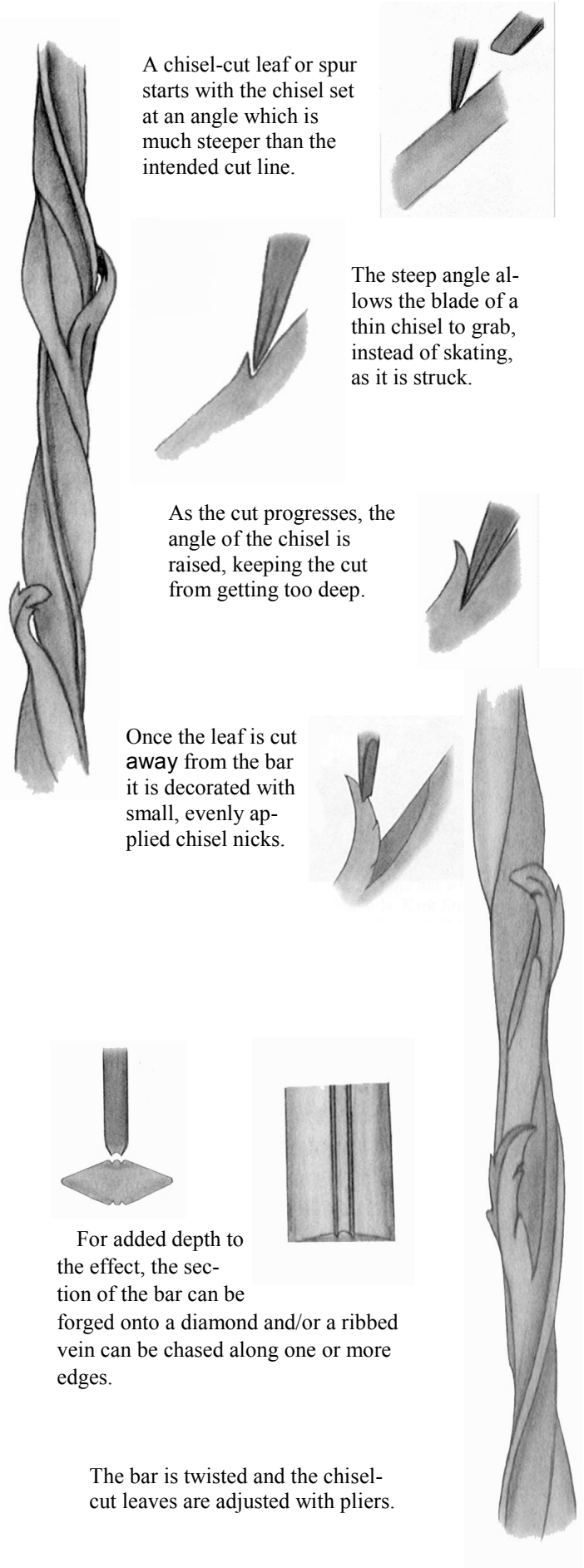
Saturday on the drive home, it rained and the temperature dropped. By Sunday morning, I was greeted once again with six inches of snow back home. Sure am glad I left the plow on the front of the pickup. Looking back at the past week, I ask myself, "Did I have a good time at 'day camp?'" Sure I did! But I thought it was a very expensive lesson in learning how to play and have fun.

## George Dixon

His specialty is Gothic ironwork learned while working at the Yellin shop. He is a master at the treadle hammer and has many tricks to share. The twist below is just one of them.

This tip reprinted from the NEWSLETTER of the BLACKSMITHS ASSOCIATION OF MISSOURI. Nov 2002 page 10.

The noteworthy aspect of this twist is the chisel-cut leaf lifted off of the edge of the bar prior to twisting.



A chisel-cut leaf or spur starts with the chisel set at an angle which is much steeper than the intended cut line.

The steep angle allows the blade of a thin chisel to grab, instead of skating, as it is struck.

As the cut progresses, the angle of the chisel is raised, keeping the cut from getting too deep.

Once the leaf is cut away from the bar it is decorated with small, evenly applied chisel nicks.

For added depth to the effect, the section of the bar can be forged onto a diamond and/or a ribbed vein can be chased along one or more edges.

The bar is twisted and the chisel-cut leaves are adjusted with pliers.

# Non math layout of a truncated cone

by Bill Wojcik

To understand this method of laying out a pattern for a truncated cone we will use an example of a truncated cone shaped like a lamp shade but small enough to be laid out on a piece of 8 ½ by 11 paper for practice.

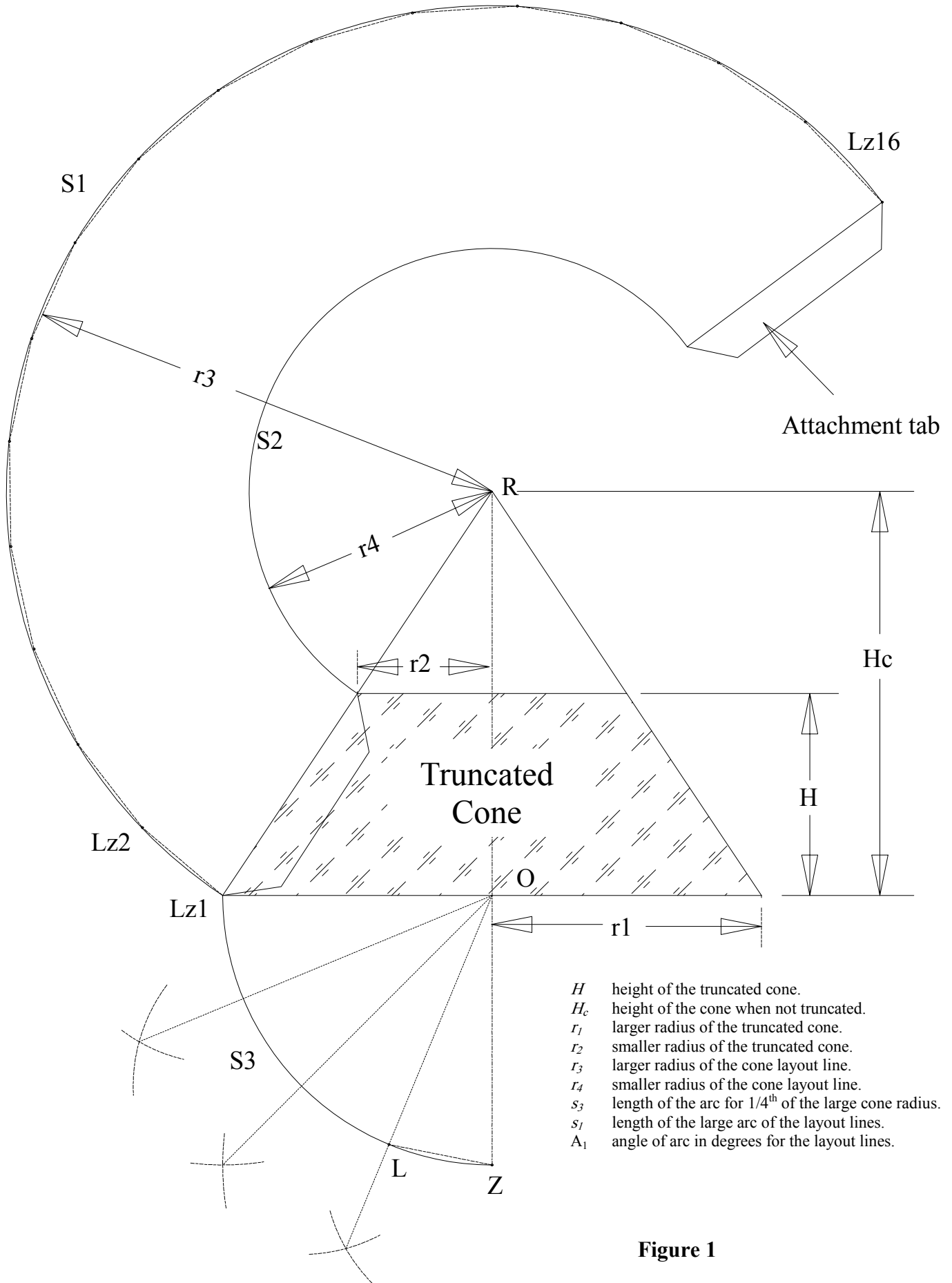
1. Select the truncated cone height of 1 ½ inches with a large end radius of 2 inches and a small end radius of 1 ½ inches.
2. Draw a full scale side view of this truncated cone as shown in figure 1 with the cone centered on the paper and the bottom center of the cone about 4 inches above the bottom of the paper. Once you understand how this works you will find you only have to draw the left half of the cone.
3. Extend the vertical center line and the sides of the truncated cone upward until they meet at the top to form a full non-truncated cone at point R.
4. Draw layout arcs S1 and S2 from the top and bottom edges of the truncated cone using point R as the center.
5. Draw construction arc S3 using O as the center and divide this arc into four pieces by bisecting it twice.
6. The length of arc S1 needs to be four times the length of arc S3. To approximate this length, use a divider to copy one of the quarter length segment chords Lz created in step 5 around the length of arc S1 16 times.
7. Arcs S1 and S2 form the key layout lines. All that is necessary is to decide how the ends will attach together to form a cone. Shown in fig. 1 are tabs that will be bent to lock the ends together.

One of the difficult parts of laying out this pattern is deciding how large the paper needs to be and where to start drawing on the paper. A trial and error method involves selecting a piece of paper about a big as you think it needs to be and then starting the bottom of the cone more than one cone radius above the bottom edge of the paper. The important parameters can be obtained by drawing only half of the cone, the left half in this example.

Another way is to calculate the two layout radii and the total angle required for the layout and then using those values to draw the layout. This can be very convenient for low taper cones that have very long layout radii.

The following formulas will calculate the radii r3 and r4 and the angle for A1.

<b>Math layout formulas for a truncated cone by George McConnell</b>		$H_c = \frac{r_1 H}{r_1 - r_2}$	Scale a smaller triangle to get Hc
Given :	truncated cone height Large radius Small radius	$r_3 = \sqrt{r_1^2 + H_c^2}$	Use pythagoras to get r3
Where:		$r_4 = \sqrt{r_2^2 + (H_c - H)^2}$	Use pythagoras to get r4
	<i>H</i> height of the truncated cone.	$s_3 = \frac{2\pi}{4} r_1$	Calculate arc length for a fourth of a circle
	<i>H<sub>c</sub></i> height of the cone when not truncated.	$s_1 = 4s_3$	Scale s3 up by 4 to get a full circle of arc
	<i>r<sub>1</sub></i> larger radius of the truncated cone.	$A_1 = \left( \frac{s_1}{r_3} \right) \times \left( \frac{360}{2 \times \pi} \right)$	Convert angular sweep of s1 to degrees to get A1
	<i>r<sub>2</sub></i> smaller radius of the truncated cone.		
	<i>r<sub>3</sub></i> larger radius of the cone layout line.		
	<i>r<sub>4</sub></i> smaller radius of the cone layout line.		
	<i>s<sub>3</sub></i> length of the arc for 1/4 <sup>th</sup> of the larger cone radius.		
	<i>s<sub>1</sub></i> length of the larger arc of the layout lines.		
	<i>A<sub>1</sub></i> angle of arc in degrees for the layout lines.		



- $H$  height of the truncated cone.
- $H_c$  height of the cone when not truncated.
- $r_1$  larger radius of the truncated cone.
- $r_2$  smaller radius of the truncated cone.
- $r_3$  larger radius of the cone layout line.
- $r_4$  smaller radius of the cone layout line.
- $s_3$  length of the arc for  $1/4^{\text{th}}$  of the large cone radius.
- $s_1$  length of the large arc of the layout lines.
- $A_1$  angle of arc in degrees for the layout lines.

***Book Review***  
***by John Austen***

***Laying the Hoe:***  
***A Century of Iron Manufacturing***  
***in Stafford County, Virginia,***

by Jerrilynn Eby. Heritage Books, Inc.  
(1540E Pointer Ridge Place, Bowie MD 20716),  
2003. 294 pp. and a Compact Disk. \$35.00.  
www.WillowBendBooks.com

This well researched volume focuses on the two main iron production facilities in 18<sup>th</sup> century Stafford County: Accokeek Furnace, and John Hunter's Rappahannock Forge. But it also includes much information on nearby facilities (since there was much interchange of materiel and personnel among them all) such as Principio in Maryland, and Neabsco and Occoquan furnaces in Virginia, among others.

The book devotes 65 pages to Accokeek and 137 to Rappahannock, as well as 18 pages of appendices (payment warrants, wills, and inventories showing much of the equipment and materiel at Rappahannock Forge). The 16-page bibliography (as well as the extensive footnotes on most pages) shows very extensive research in the surviving primary sources, as well as a number of secondary sources used mostly to explain typical operations. The 1797 Encyclopedia Britannica is quoted several times to illustrate various industrial processes as they were probably practiced at these facilities. Other references are more speculative, such as Diderot's Encyclopedia, and Litchfield's book on the German Moravian oil mill in Bethlehem Pennsylvania in 1745. These delineate French and German practices in the eighteenth century, which might differ from English practices, although any or all of these may have influenced the American facilities.

Accokeek furnace operated mostly in the 1730's and 1740's. It was associated with the Principio Iron Company (and was the headquarters of that firm for a time, while Augustine Washington was in charge), the largest iron producer in colonial America at the time. The book has many inter-

esting sections on company organization, charcoal production, mineral coal, the company store, furnace technology, shipping and transportation (including early roads), management and labor (including slaves), and mercantile operations. It includes several very useful lengthy quotations from primary sources, such as the following:

The [Accokeek] piggs ... are too white, if they were grey they would go off much better.

The way to distinguish grey piggs from white is this: taber upon them with a hammer and if they have deadish leaden sound they are grey, they will also be pretty level in the belly of the piggs, & the edges of them will be blunt. If they are white, by hammering on them they will ring much more, the undersides of them will be hollow & the edges much more sharp, and if you strike the white ones at the end they will break short.

This information I had from a Founder whom we sold a parcel to; and this difference is not so much owing to the ore as the fluxing, for we have pretty near an equal quantity of grey pigs mixed with the white which inclines me to think this must be some mismanagement of the Founder that they are not all grey.

This shows that much of the output was intended for use at city foundries producing cast iron goods; the white iron would usually find its way to a finery forge for conversion to wrought iron. End products were also cast at the furnace, including hammers, anvils, firebacks, and other goods.

A compact disk is included with the book, showing the business ledger for Accokeek Iron Works from 1749 to 1760. It shows that blacksmithing and repair make up a large part of the income at Accokeek.

Rappahannock Forge was one of the largest manufacturing centers in North America from the

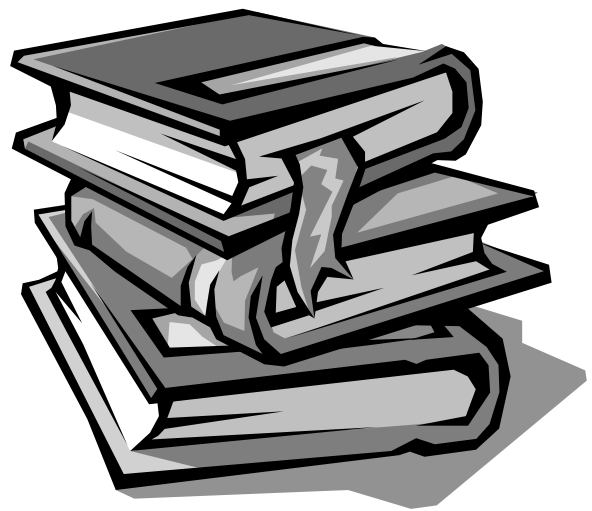
1750's through the Revolution. Recent research shows that it produced a wider range (and greater quantity) of arms than previously known. Pistols, muskets, wall guns, and a carbine have been identified. Much other military equipment was also produced, ranging from swords to camp kettles and traveling forges. The facility produced a variety of domestic goods as well. The water-power system was installed in 1757/8. A wing dam was erected in the Rappahannock and a ¾-mile long canal was cut, with three tailraces for different undershot waterwheels. Another stream was impounded at the lower end of the site and powered overshot wheels for the furnace, plating mill and rolling and slitting mill. The site included two furnaces (one replaced the other), after Accokeek closed and it became more difficult and costly to bring pig iron from Maryland facilities. In addition to the finery forge (51'x128': eight fires and four hammers) and blacksmithing operations the facility included a wire mill, armory, steel furnace (for production of blister steel), sawmill, fulling mill, gristmill, and merchant mill (for commercial production of flour for export). The merchant mill was an Oliver Evans type by 1798, similar to Colvin Run Mill (the one at Rappahannock Forge was 70' by 36' whereas Colvin Run Mill is about 42'x50'; both had three sets of millstones). It also had a still, and various fiber processing facilities (it made hemp rope, and wool, cotton and linen cloth), and an oil press (for linseed oil, and probably cotton and hemp seed as well). By the time of the Revolution several shops had been added for the cooper, saddler, shoemaker, brass founder, and wheelwright.

The book includes several illustrations from Diderot's Encyclopedia, reproduced well enough to introduce the uninitiated to the processes addressed. The two illustrations showing firearms made at Rappahannock Forge did not reproduce very well, nor did the map showing sites in the county. The text is very well written and edited (except for a couple of typos and minor technical errors), and takes full advantage of the sparse remaining primary sources. A transcription of one of the more valuable primary sources is included on a CD. The book title becomes clearer after reading the brief glossary of blacksmithing terms

also included on the CD:

**Laying:** one of the most frequent operations performed by a smith. Implements such as hoes, axes, and plows usually had wooden handles and wrought iron heads with a strip of steel welded on to make the cutting edge or face. When this became worn, the process of replacing it was called laying or steeling.

The great strength of the book derives both from the extensive quotations and from the synthesis showing the interrelationship for the several colonial iron production facilities in the Chesapeake area. It also provides a useful review of the overall business aspects of these enterprises, from corporate, technical and mercantile perspectives. It will be of great interest to historians and genealogists, and it cries out for an archeological investigation of these early industrial sites.



## Drawing a Round Taper

story & photos by Mark Aspery, Springville, California

The ability to draw a round tapered point is a skill that is continually used by a smith. Unlike most other crafts, the blacksmith does not have to think in terms of stock removal to get a taper. She can just redistribute the metal she has.

There are some steps that must be followed in order to carry out this redistribution of material. Merely rotating the bar as you forge a point will not work, for you will have a tendency to push a bubble of metal around the bar, creating a flap that will both be unsafe and visually distracting. You might get away with it occasionally on small stock, but you would be relying upon the fickle finger of fate rather than blacksmithing skill.

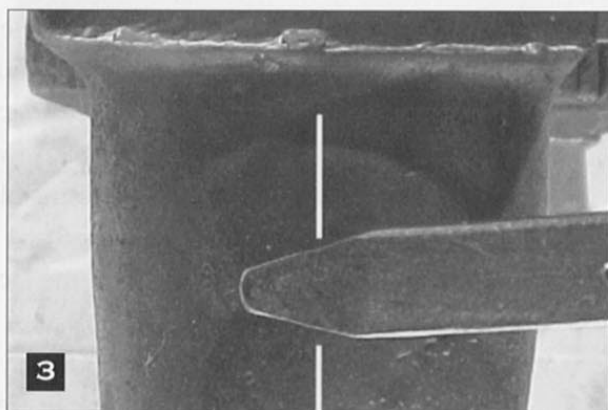
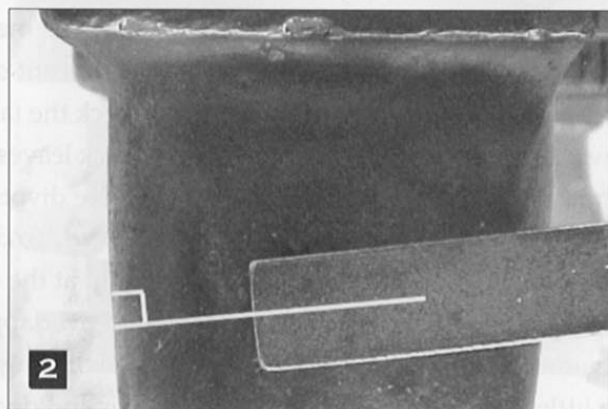
Generally there are two places on the anvil to draw a point: the offside edge of the face or on the bick (horn). Both places are used to protect the anvil as you make the taper. The offside edge is used to protect the face of the anvil. The hammer will be hitting the stock at an angle (the angle of the taper or point), with the toe of the hammer lowest. If you forge your taper in the middle of the anvil face, you run the risk of burying the toe of the hammer into the face of the anvil (see Figure 1). Using the bick (horn) gives you the same clearance for the hammer but draws the point faster, as explained in the Cow Poop Theory of Blacksmithing (See *California Blacksmith*, Nov/Dec 2002, page 14).

Whether you use the bick or the offside edge, the piece or stock is held at an angle, not flat, for a compound taper. For example, if you were to forge a taper of  $45^\circ$ , and the point had to finish in line with the center of the bar, then the angle at which you would hold the stock would split the desired finish angle. You would hold the bar at  $22.5^\circ$  to the anvil. That way, with the hammer coming in at  $45^\circ$  to the anvil, the point is kept central to the bar.

In the photos, I have center punched a mark about  $1\frac{3}{4}$ " from the end of the bar. That is where I want the taper to stop.

I was taught to use the bick to draw a point, but the offside edge works just as well. Shown is a series that uses the bick for gross drawing of the taper.

**Whenever you have to forge a point, make the point first.** That sounds a little too simple, but it is often overlooked. Suppose that you had to draw a taper to a fixed length. If you were to start the taper an arbitrary distance from the end of the bar, it would be difficult to determine



how long the taper would eventually be. If you start at the end of the bar and make the point you can continually extend the length of the taper until you reach the desired length.

By roughing out the taper on the bick or horn, you can *take* advantage of the baseball bat side of the Cow Poop Theory.

*Figure 2* shows the start for drawing on the bick. Note that the stock is also held at a right angle to the tangent of the bick and not 90° to the centerline.

*Figure 3* shows the beginning of the taper. Don't allow the point to get too far past the bick centerline, as you will be bending the bar and not drawing a taper.

Just as an accountant would not wait until the end of the year to find out if there were going to be a profit or a loss, so too a blacksmith must balance the books (check the taper) as she works out on the bick. Working on the bick leaves divots or hollows in the piece.

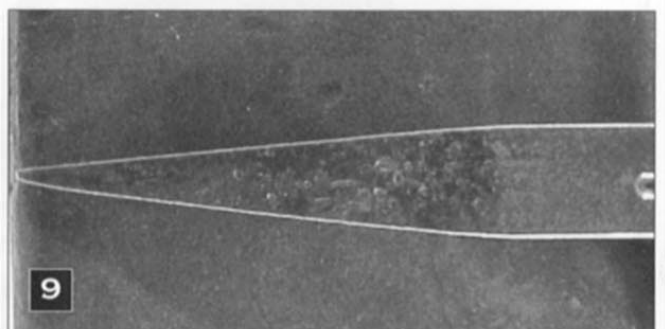
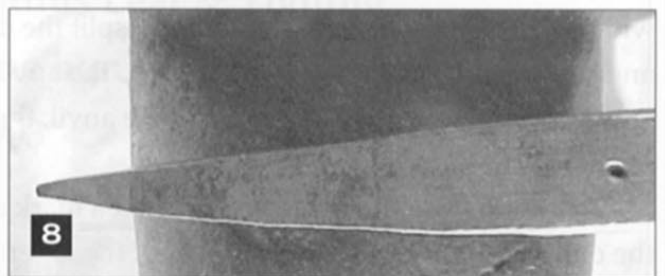
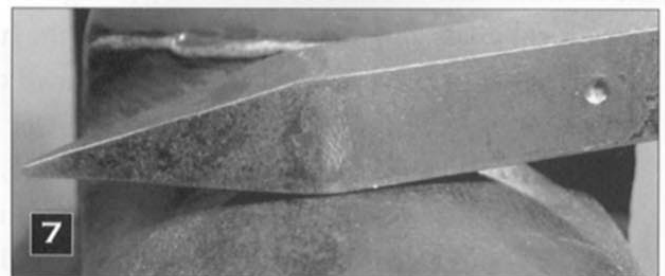
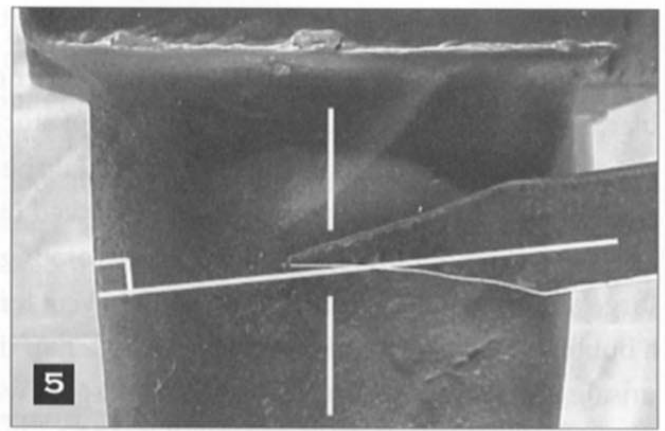
Unless you want these divots as a texture on the finished piece, they must be removed. To do so, bring the piece to the face of the anvil with the point at the off-side, radiused edge and true up the stock with overlapping hammer-blows (*see Figure 6*). That action will lengthen the taper a little. Now check the length of the taper and decide whether to return to the bick for gross drawing of the stock or stay on the face for a little fine tuning. I have exaggerated the bick to face routine checking for length for demonstration purposes. I would normally do a lot more gross drawing before checking for length.

*Figure 7* shows a truing up of the initial drawing down. After checking the taper, I head back to the bick for more gross drawing down of the taper (*see Figure 8*).

The square taper is finally trued up on the face of the anvil (*see Figure 9*). There is an order to drawing tapers. If you wish to end up with a round taper, it must first be drawn square, then octagon and finally round. That continually moves the stock to the center of the bar to be redistributed.

If you do not turn the bar a true 90° as you make the square, or if you do not deliver your hammer blows straight up and down (you may have a tendency to swipe the hammer, allowing it to travel from right to left, for example), then the square will look more like a diamond in cross section. If you catch it early enough, you can correct the error (and look at your technique) and get back to the square.

To do so, place the stock on the anvil so that the



long axis of the diamond is up on the face of the anvil. Forge in the long axis corner and then continue forging the square taper.

By forging in the long axis corner you are pushing in the excess stock towards the center of the bar to be redistributed equally to all four sides.

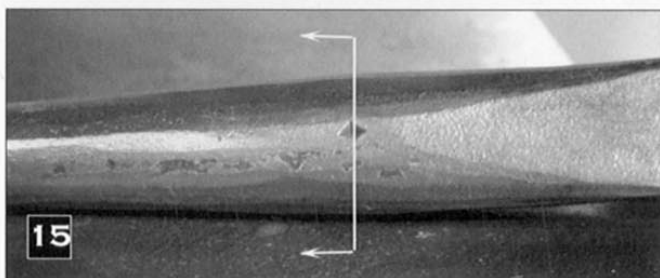
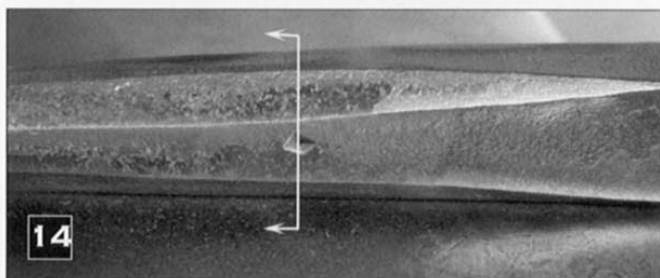
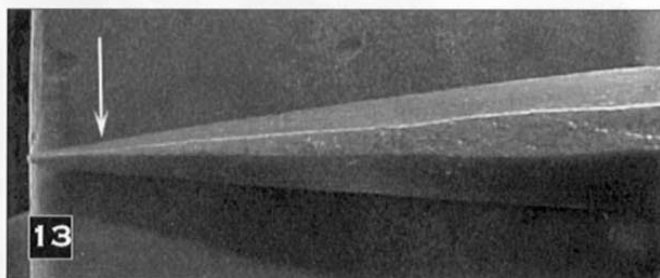
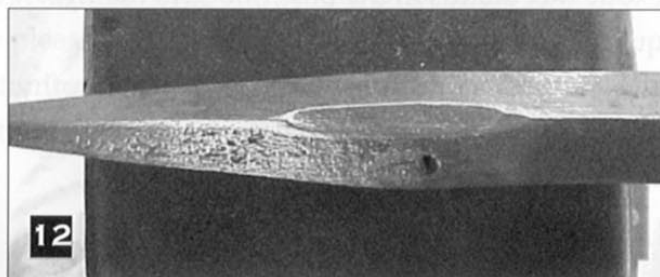
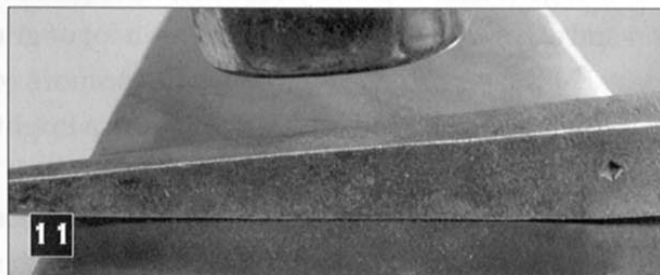
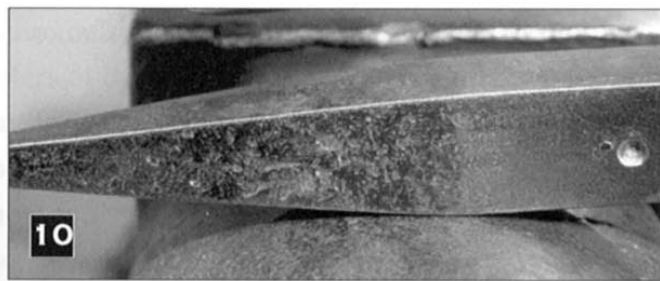
In order to make the octagonal shape, the corners of the square are forged in. *Figure 12* shows the start.

Remember to work all appropriate sides. While the anvil will return most of your hammer blow, some are lost within the work, and the two sides will not be equal. To facilitate a smooth transition from taper to parent stock, the taper must be extended behind the center punch mark. I start at the junction of the taper and parent stock. When I go from square to octagon, I ignore the very tip of the point when I forge in the first and second corners. I forge in every corner to ensure a uniform taper. Only when I forge the third and fourth corners, do I work the very tip. The tip is not supported and yields easily to a blow. I find that if I forge the tip from all four corners, it results in the tip being over-worked, forming a square 45° to the last side and not an octagon. The arrow in *Figure 13* indicates where I stop.

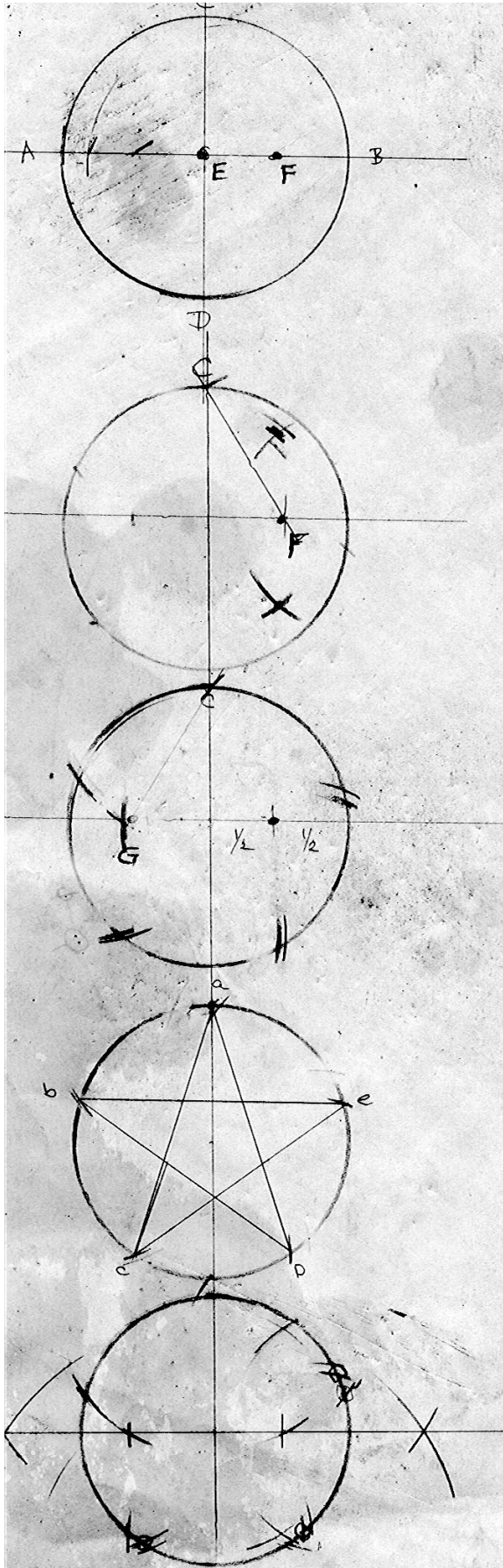
From the center punch mark to the pointed end of the taper, the section is a TRUE octagon. From the center punch mark back to the parent stock, the section is merely square with the corners knocked off - still eight sided, but not a true octagon. *Figure 14* shows the result.

To get a true round taper, you need to start with a good octagon, which, of course, comes from a good square section.

Finally, to make a round taper, forge in the corners of the octagon. Again, I stay away from the tip in the initial forging. It may be that with a big bar you may still have to forge in these newly produced corners; however, with light stock, the transition from octagon is usually sufficient to get you close to round. At this stage dress any remaining lines. For a smooth finish, such as for a punch or drift, consider hot *rasping* the taper. The area behind the center punch mark is merely square bar with the corners rounded. ..



## Laying out a 5 sided figure



To Draw A 5 point Star:  
Draw a circle of the correct Ht.  
Bisect this circle as shown.  
F = Center point of line EB.

Set Compass to FE and mark  
off G using F as center

Set Compass to CG then from  
C. MARK OFF 4 marks on  
CIRCUMFERENCE

Connect DOTS AS SHOWN.

by: Bill Wojcik



Artist-Blacksmith's Association of North America, Inc.  
PO Box 816  
Farmington, GA 30638 USA  
706-310-1030 tel ☐ 706-769-7147 fax  
abana@abana.org ☐ www.abana.org

## **ABANA Affiliate Liaison Letter**

September, 2003

In October, 2003 I will complete my term on the ABANA Board of Directors and therefore will no longer be the chairman of the Member Services Committee. This is a good time to review the activities of this committee during the past three years. The off-board members of this committee are local to my area. These persons are: Charlie Bateman, Dave Feterl, Mary Fredell, Dave Mariette and John Moriarty. We have met monthly during two of the past three years and occasionally during one year. We decided to focus on three programs.

### **ABANA Resource Guide**

The ABANA Resource Guide comes in the form of a three ring notebook with 65 pages of information for the affiliates. This guide contains information that members have long been asking for such as the ABANA Board minutes and the biennial budget, as well as other information. The guide will be mailed to ABANA Affiliate presidents in September 2003.

### **A Program to Share Successful Affiliate Activities.**

This program has provisions for an affiliate to write a description of one of their successful activities, send it to the Member Services Committee and this committee sends it to all the affiliates. Unfortunately, only two affiliates have participated in the program. These two submissions are included with this letter. Hopefully, more affiliates will send to us a statement of one of their successful activities. For submission directions see the ABANA website and click on Affiliates/Successful Affiliate Activities.

### **A Program To Enhance ABANA-Affiliate Communication.**

After much discussion we came up with an idea that would formalize the communication process. A number of affiliates have signed up to participate; they have appointed an ABANA-Affiliate Representative, have received items from ABANA and are up and running with the program. ABANA Board Member, Bob Jacoby is in charge of administering this program. For more information see the ABANA website and click on affiliates/A Program To Enhance ABANA-Affiliate Communication.

It's been a busy three years and our pleasure to serve ABANA.

Bob Fredell, Chairman  
Member Services Committee  
bobfredell@abana.org

## **A Program To Share Successful Affiliate Activities**

### **An ABANA service to The Affiliates**

The Guild of Metalsmiths (Minnesota and Western Wisconsin) wishes to share this successful activity with all affiliates. For more information contact Pete Stanaitis, (715) 698-2895 or [spaco@baldwin-telecom.net](mailto:spaco@baldwin-telecom.net).

#### **What is this successful activity.**

The Guild of Metalsmiths conducts a yearly Instructors' Workshop to train the instructors who teach our beginning workshops. The Instructors' Workshop is an all day Saturday event. All instructors are required to attend.

#### **Why use this activity.**

The Instructors' Workshop (1) aids in the recruitment of instructors, (2) improves the quality of instruction and (3) makes all the beginning workshops consistent with one another.

Recruiting a sufficient number of instructors is often a problem because 12-15 instructors are needed to teach all

three beginning workshops. If prospective instructors realize that they will receive support and training they will be more likely to volunteer for this position.

Training of teachers always improves instruction. This is especially true because many of our first year instructors are inexperienced in teaching blacksmithing workshops. Even persons with some experience can benefit from additional training.

Consistency between all the beginning workshops is necessary. This is achieved by having one curriculum and having all instructors agreeing to use only that curriculum.

### **Description of the successful activity.**

The persons registered in the Instructors' Workshop are being prepared to teach The Guild Of Metalsmiths Beginning Workshops. The Guild of Metalsmiths conducts three Beginning Workshops each year. Each workshop consists four all day Saturday sessions. The first three sessions are devoted to instruction and practice of the basic blacksmithing processes and during the fourth day the students make two or three items.

Throughout this article the persons enrolled in the Instructors' Workshop are referred to as *students* in the Instructors' Workshop and as *instructors* in the Beginning Blacksmithing Workshop. For clarity, from this point on they will be referred to as student/instructors (SI.)

The Guild of Metalsmiths has held the Instructors' Workshop annually since 1996. The content of the workshop changes every year as the needs of the SI's change and as the instructors of the Instructors' Workshop gain experience in conducting this workshop. At the conclusion of the workshop the SI's are asked to complete an evaluation form which the instructors of the Instructors' Workshop carefully consider and use in the planning of next year's workshop. The instructors also visit the Beginning Workshops to gain personal impressions on the instruction.

The following description of the curriculum contains that which has been taught over the past eight years; not everything is currently used. The workshops evolve over the years.

- ❖ A 33 page manual is given to each SI.
- ❖ During the beginning years considerable time was spent planning the curriculum of the Beginning Blacksmithing Classes. As the years went by we gradually decided upon what should be taught and how we should teach it. Currently, we spend little or no time changing the curriculum. However, we do need to emphasize the need to stick to the curriculum and for the SI's not to go off in different directions when teaching the Beginning Blacksmithing Classes.
- ❖ The SI's are given instruction on how to demonstrate a blacksmithing method. They then role-play giving a blacksmithing demonstration. (Role-playing is the most valuable part of this training!) The other SI's give feedback to the role-playing SI's with the emphasis on being supportive and positive.
- ❖ The SI's are given instructions on how to supervise students at the workstation. The instruction follows the same procedure as in "how to demonstrate," described above.
- ❖ We teach and role-play the Instructor-Coach Method. Since the newer SI's teaching the Beginning Blacksmithing Workshops are not highly experienced and able to smoothly teach independently, an SI coach is used for support. The SI coach follows along with the demonstration using a written guide giving prompts to the SI demonstrator when needed. This process must be role-played for the SI's to feel comfortable with it.
- ❖ How to give instruction and feed-back to a new blacksmith in the basic course is important. We instruct and role-play this process emphasizing facial expression, tone of voice, words that are used and to be generally supportive. This instruction has been given in a variety of ways over the years.
- ❖ Teamwork. Each year three teaching teams are formed and they begin the process of meeting together to plan their workshops. Remember, the three most important aspects of teaching a good workshop are preparation, preparation and preparation.
- ❖ Blacksmithing skills are not normally taught at this workshop. However, there have been a few times that the instructors have observed the need to give a short demonstration on a specific blacksmithing skill.
- ❖ The Certificate of Associate Instructor is presented to the first time SI's, Certificate of Instructor is presented to second year SI's, and a seal is affixed to the previous certificate of the "old timers".

### **How may you use this activity.**

Think about the workshops that your association has taught. Could they be improved with more preparation similar to that described in this article? Remember, there are many, many details not given in his article—you will have a good time discovering them for your self. Talk about it with the persons who teach blacksmithing workshops for your association. *Best of all, discuss this activity with your board of directors.*

**BGOP Membership Application and Renewal**

Name \_\_\_\_\_ Home Phone \_\_\_\_\_

Address \_\_\_\_\_ Work Phone \_\_\_\_\_

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

I am a member of ABANA, The Artist Blacksmiths Association of North America  Yes  No

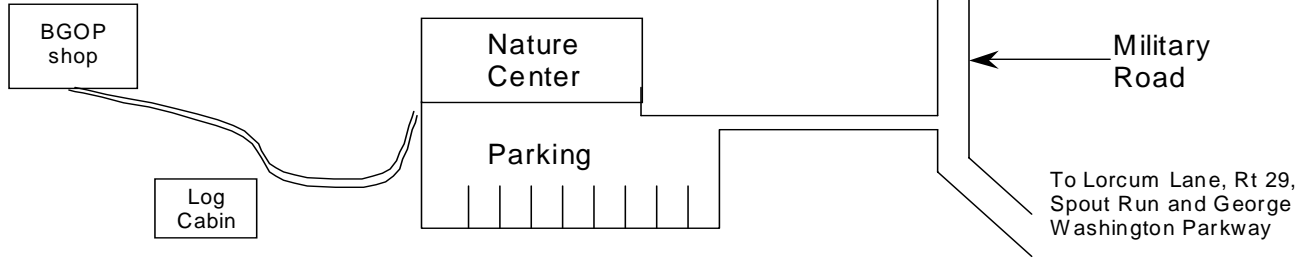
New Member—\$30 or 3 yrs—\$60  Renewal—\$20 or 3 yrs—\$55  Life—\$300

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Application may also be made at the ABANA

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Credit Card Information

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Submit check, money order (US banks only), or by credit card:

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ABANA

PO Box 816

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Phone: 706.310.1030

Fax: 706.769.7147

M E M B E R E S H I P A P P L I C A T I O N