

# AMERICAN BLADESMITH



SUMMER 2024 ISSUE 66



**Antique Bowie - Mastersmith:  
Josh Fisher**



**Moran Award:  
Matt Stagmer, JS**



# AMERICAN Summer 2024 Issue 66 BLADESMITH

JOURNAL OF THE AMERICAN BLADESMITH SOCIETY, INC.



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## Carolyn Hughes, Editor

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## 2023 AWARDS ON THE COVERS

Photos by: Mitchell Cohen

**Front Cover:**  
**Antique Bowie MS**  
**Josh Fisher**

**Inside Front Cover:**  
**Moran Award**  
**Matt Stagmer, JS**

**Back Cover:**  
**Hughes Award**  
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## NOTES FROM THE EDITOR

A host of bladesmiths, their families, Texarkana College Employees, and friends filed into Big Jake's BBQ in Nash, TX, a couple of miles West of the Moran School of Bladesmithing on the Texarkana College Campus on Friday evening, April 12, 2024, the night before the beginning of the 40th anniversary Spring Piney Woods Hammer-in celebration commemorating the first such seminar sponsored by TC.

Note: The above does not mean it was the first Bladesmithing seminar, but it was the first seminar sponsored by TC. A seminar was held by the ABS at the University of Wyoming in 1983.

As the days passed, my thoughts turned to the event held in 1984 at the blacksmith's shop in Washington, AR.

The instructors for that hammer-in were the four founders of the American Bladesmith Society, President, Bill Moran; Treasurer, Don Hastings; Secretary, Bill Bagwell; and Director, B. R. Hughes, my husband.

James Powell, a TC administrator, was in charge of the event and when 19 signed up for the seminar, all concerned were very pleased.

The shop had a coal forge and a grinder but most of the work was done by hand.

Classes included Knife Design, Basic Forging, Steel Selection, Handles and Guards, Grinding, and JS and MS Judging. Each of the four Directors taught at least one class. Except for a grinder, there were no power tools, and all forging took place with hand held hammers and glowing hot coals.

The 2024 version of the Spring Piney Woods had 50 attendees and six instructors with 13 Demos that were held in modern air conditioned buildings with power equipment and modern classrooms, but no coal.

Mike Williams, MS is Director of the Spring and Fall hammer-ins.

That first TC hammer-in forty years ago laid the foundation for the W. F. Moran School of Bladesmithing

## FORUM, TWITTER, ETC.

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## ARTICLES AND ANNOUNCEMENTS

The ABS pays **\$150 for any major article** published in the journal, with pictures included, and payment is made upon publication of the article. How-to articles are especially needed, as are reports on ABS hammer-ins, etc. Send with accompanying pictures, **300 or more dpi**, to **Carolyn Hughes, 305 Phillips Circle, Wake Village, TX 75501** or you may send by email to [carolynleehughes@gmail.com](mailto:carolynleehughes@gmail.com). Pictures should be sent as an attachment rather than in the email. We also feature upcoming events, such as hammer-ins, shop visits, etc. Send information of those happenings to the same address or email above.

## ADVERTISING

The American Bladesmith Journal is published triannually and accepts advertising in keeping with the promotion of the forged blade. Ads may be camera ready or we will create an ad for you and may be either in color or black & white. Deadlines, size, and cost are in the next column. Contact **Carolyn Hughes at [carolynleehughes@gmail.com](mailto:carolynleehughes@gmail.com)** to place an ad or for more information.

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the School tab, scroll down the list and  
click on Kilroy's Workshop.

# CHAIRMAN'S CORNER \_\_\_\_\_ by Steve Dunn



When I joined the ABS, little did I know it would be a life changing experience. So many memories and times I recall at all the gathering the ABS provided. So many friendships over the years have been forged.

In 2003 I was asked to join the ABS Board of Directors.

Fast forward to 2019, when Chairman Harvey Dean stepped down as Chairman and I took over.

It's been a great honor in my life to serve as ABS Chairman. This year I will celebrate 30 years as an ABS Master Bladesmith in the ABS.

The progress of the ABS is strong, membership continues to grow worldwide. And a special thanks to....who started it all!

Bill, Bill, Bill, Don!

Lastly, I think the ABS will be in good hands as I pass the gavel to Master Bladesmith Kevin Cashen.

- Steve

Well, here we are in 2024, and the Blade Show is right around the corner. This is a wonderful event for any knife enthusiasts, especially one that love the forged Blade.

I joined the ABS in 1990, after learning about the organization through a magazine publication call Blade, imagine that. In 1990 I enrolled in the Introduction to Bladesmithing course at old Washington, Ar., at the Bill Moran School of Bladesmithing. My instructor was Joe Keeslar.

Through my early years as a member of the ABS, I went to as many Hammer-in's as I could and got to know many of the fine instructors. I met Bill Moran and his wife Margaret, Bill Hughes and his wife Carolyn. Both men founders of the ABS. I did meet Bill Bagwell, one time in Old Washington, but unfortunately never met Don Hasting, the other founder.

## HEARTBREAKING NEWS

Steve's farewell article arrived shortly before his untimely death May 21st. We send our condolences to his family and friends. His obituary may be found *on page 21*.



# NEW ENGLAND SYMPOSIUM

BY MATT PARKINSON, JS

PHOTOS BY DERECK GLASER

This was an event that was special. I have been attending the ABS Spring hammer event for a number of years and it is always an enjoyable event; this one was epic, however, so it is no surprise that this year had the highest attendance in the 13th year of its run at 95 registered attendees. The Crew at NESM setup so much to do and learn, from so many incredibly talented smiths, that it was impossible to see it all. That sounds like it might be a bad thing but it isn't. Each of the three areas hosting talks or demos throughout the weekend had something



completely different to offer at all times, so everyone was able to find something interesting to learn. The hardest part was deciding what to miss. It certainly made the weekend fly by.

The event started off Friday afternoon with the traditional first forging presented by the highly skilled Jordan LaMothe, MS. I arrived at the event just in time to watch the last half of his demo, and as always I was impressed with Jordan's skill and ability to explain what he is doing as he finished forging out a lovely chef knife blade.

Jordan's demo segued into the first grinding, presented by Salem Straub. I was quite excited to watch Salem work as he has been doing some incredibly clean work over the last 5-10 years. He did not disappoint in giving a clean well-controlled grinding demonstration. Not the easiest thing to do in front of a crowd with unfamiliar equipment and working on another's forging.



That concluded Friday's demos but was not the end of the event for the day; we all headed over to Side by Side Brewing for a pleasant evening of craft beer, food and a lot of catching up.. Drinking beer



and swapping lies seems to be a favorite pastime of many of us, myself included. Saturday morning opened in the forging area with Gregg Cimms, JS giving an extremely informative demo on Hamon heat treating. I followed this up in the foreign area demonstrating the forging of High carbon stainless steel, forging several paring knives and a chef blade from a variety of stainless steel.

In the blade shop Ben Bred, a JS gave a demo on fitting guards without a milling machine.

Meanwhile in the classroom the day started with Jason Morrissey giving a great lecture on pattern development in Mosaic Damascus. This was followed by Salem giving a talk on knife design, and Emiliano Carrillo ended the morning giving a talk on Japanese blade fittings.



As we broke for lunch the NESM Crew set up the Anvil Cafe, to feed the hungry hoards. We all had another chance to sit and catch up. These events are wonderful for getting old friends together, but we never seem to have enough time to just chat, so this was a welcome opportunity to sit and chat over a nice meal.

So far, we had been blessed with great weather, however, the news was calling for heavy rain and high winds Sunday, so the decision was made to move the knife show to Saturday and the auction to Sunday.



This proved to be a very good plan; the knife show went great with some really amazing work on display. As we returned to the demos, in the blade shop Greg Cimms, JS schooled us on finishing out that amazing Hamon he had heat treated

touching on several subjects was held. Ben Breda followed up in the hot shop with a very well done demo forging one of his signature Bowies. Jordan moved to the classroom to give a slideshow on Koftgari and some of the Indian arms he was able to document in India.



Lunch was served in the welding shop to avoid what at this point was fairly heavy rain, but that didn't seem to dampen anyone's enjoyment as we sat and chatted over lunch.

After lunch we gathered in the hot shop for the auction. Mace Vitali, JS, acting as auctioneer, is always sure to be entertaining. (and not just when I poke fun at him). The auction raised over \$3000 for the NESM youth program.

I think a Big Thank You needs to go out to all of you who donated something or bid on one of the items; your generosity will help to further a very worthy endeavor.



After the auction I gave a demo in the blade shop on Jewelry tools and techniques that can be applied to knives.

In the Hot shop Salem demoed his methods for integral bolsters that I was very sorry to have missed.

In the classroom Emiliano gave a slideshow play by play of a recent wakizashi project.

As the last demos concluded we filtered back into the welding shop for the real reason we all headed to Maine.. LOBSTER!

As we enjoyed the last of the weekend together eating, talking and laughing, the weekend seemed to have passed far too quickly, leaving us all looking forward to next year.

earlier. In the forging shop Jordan again impressed us with his forging skill showing how to forge with a design in mind. In the classroom Ben Breda talked about sheath design and construction.

We broke for dinner at this point, with many of us going to a perennial local favorite Mac's Seafood. We quickly returned to the school to watch the Battle of the Bladesmiths! Jordan, Emiliano, and I had front row seats as we judged this year's battle. This year's competitors Kyle Hooker, Jeremy Yelle, JS, Erik Hemker, and Luke Nivalaas, a late fill-in, as one of the contestants had a car accident and was unable to attend. Each contestant was allowed one heat on the power hammer, to forge down the 1" hex 1080 starting material. All four had a plan and worked fast and hard to complete their knives in 2 hours. After one of the closest and fiercest battles I have seen, the winner was Luke Nivala.



As predicted, Sunday dawned a little cooler and wet, but we persevered. Jordan Lamothe, MS gave a very well attended demo on Koftgari in the blade shop, Koftgari is an Indian gold/ silver overlay technique. Jordan spent the last year in India on a Fulbright scholarship learning from some of the best Koftgari masters.

In the hot shop Emiliano demoed hearth Iron reduction. In the classroom a round table discussion



# GREAT AMERICAN SUPER HAMMER-IN

by Cindy Sheely

Photos by Tim Buzyan

The Great American Super Hammer-in this past August 2023, hosted by the Southern Ohio Forge & Anvil Blacksmith Club (SOFA) at the Miami County Fairgrounds in Troy, Ohio had the largest registration of any ABS hammer-in so far with 190 paid participants and approximately 325 people on site, including staff, demonstrators, and families. We need to thank the "SOFA" Southern Ohio Forge & Anvil, blacksmith association; they host us and are always on site making the job much easier for the ABS. Butch Sheely was coordinator for this event as he has been at the past Mid-American events. Butch had help from ABS board members selecting the demonstrators and making calls to get them on board.

What did we want to accomplish by putting on a "Super" hammer-in? We wanted to provide a less stressful, less expensive place to be judged for Journeyman Smith and Master Smith and we did it. At one

point we had 35 on the list to judge for JS in Ohio, per usual that number went down the closer we got to the deadline, but we still had 24 on the list when we prepared for the event. At

the end of judging, we had 6 new JS and 1 new MS. Our newest Master Smith is Karis Fisher. Our new Journeyman Smiths are Paul Petro, Tyler Hackbarth, Luke Dellmyer, Ben Johnson, Joshua Frost and Nicholas Killmeier. A special congratulations to Luke Dellmyer who also won the James R. Lucie award for the best knife submitted by a new Journeyman Smith. Congratulations to all.



When we think about this success, we need to realize it is the success of the membership and blade world, we would have no success without you all. You come, pay the fee to pay the demonstrator, you attend the demonstrations, and you are the success of the Hammer-in. Without your dedication to learning we couldn't do the teaching, so pat yourselves on the back for a job well done and the ABS thanks you for your attendance.

There was a unique situation for the ABS that came from this year's Ohio judging, we have a father/daughter Master Smith team now. Karis and her father Josh



Fisher. We have husband and wife Masters, but this is a first father/daughter and very special. In 2021 Josh and Karis were judged, Josh became a Master and Karis a Journeyman. They each won the best

knife presented in their category that year. Well done. When Karis left the event in Ohio, I was pretty sure that smile was going to last a few months.

In a way to honor the JS and MS we had a dinner on Friday evening, catered by Shoelaces Catering. It was a big hit. We had seating for and sold tickets for 150 dinners. The food was good, and the camaraderie was wonderful. The ladies that served the meal, Candy Martins, Shanna Maust, Karen Cashen, Laura Hostetler, Suzanne Roosevelt, Cheryl Sheridan and Sandy Cook deserve much praise and thanks, Laura and Sandy for



running out for the deserts and drinks, and all of them for keeping me on track.

Another reason to have more demo areas



and more content was to give more to the more advanced smiths. We of course need the basics because most hammer-in goers are beginners to intermediate. We don't want to neglect the JS and MS and all those already doing that quality of work. The location has ample room for this growth, so the board hammer-in committee decided to give it a try. I believe we accomplished that too.

There were 3 demonstrations stations, one classroom and a hands-on area. We had 11 demonstrators. Kevin Cashen and Tim Zawada made a steel smelt. We had designated times to do performance testing. There were a larger number of tailgate sales than we have seen in the past and we had 12 vendors inside the building. The whole weekend was steeped with excitement.

We had live music two evenings, Friday evening a local favorite, Ken Coleman, and Saturday evening we had John Wayne



Wiggins from North Carolina. John wrote the song "Tequila Makes Her Clothes Fall



Off". It was great way to enjoy and relax in the evening with new and old friends.

I did not attend the demonstrations but believe me when I say if someone doesn't like something I am the one to hear about it, everyone was full of gratitude for the wonderful demonstrations we had, here is the demonstrators/demonstrations for the weekend. We thank them all for their dedication to the purpose of education and promotion of the forged blade.

**HOWARD CLARK** – HEAT TREATING  
**BILL RUPEL** – FOLDING KNIVES  
**TIM ZOWADA** – STRAIGHT RAZORS  
**STEVE CULVER** – SILVER SHEATHS,  
SILVER WRAP HANDLES  
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**BURT FOSTER** – CRAFT OF  
BLADESMITHING & HOW IT'S UNIQUE  
TODAY, KITCHEN KNIVES  
**STEVE DUNN & GREG NEELY** –  
JUDGING STANDARDS  
**MARK ZALESKY** – California Knives of  
the Gold Rush Era  
**TIM ZOWADA & KEVIN CASHEN** –  
SMELT

One area that gets little praise and less thanks is the Green Coal or hands on area. While there was a plan to have the area manned all day each day this year, it didn't work out so well so we must shout out to, for one, Shane Maust was there when needed to help those that wanted some hands-on guidance. Thank you to Shane. Shanna Maust and Karen Cashen were there,

anywhere I needed and were a great help with registration. Karen Cashen handled the applicants for judging, can't thank her enough for taking care of our guys and gals being judged for rank. All the gals who served dinner did a lot more, so much I don't know how to begin to thank them, thank you all.



The knife show and Auction happened on Saturday afternoon, we saw a larger number of people come in for just this time that was open to the public. This is good, we can't let people know what we are doing and what's available if we don't get them through the door. The Auction total was over \$11,000. This was so wonderful; we were able to cover all expenses so thank you to all who put something in and all those who purchased. We thank ABS board member Robert Wilson for being a great auctioneer.

Robert Wilson and his wife Debbie also set up an informational table on the William F. Moran Foundation. William Moran is the founder of the ABS as most know, but many new and younger folks may not, so it was nice to have them there.

We thank and appreciate the great job all the demonstrators, SOFA staff, and other volunteers did; they all put in a lot of effort and shared so much of their talent and skill.

Thanks to all for the participation and we hope to see you next year.



# THE FALL 2023 PINEY WOODS HAMMER-IN

A Staff Report

Photos by Jenny Crowell

The Fall 2023 Piney Woods Hammer-in was held October 21-22 at the William F. Moran School of Bladesmithing located on the campus of Texarkana College, Texarkana, Texas.



A dinner for the participants was held at a popular Texarkana Eatery the evening before the hammer-in began, which featured



an oral presentation by B.R. Hughes a founder of the American Bladesmith Society, and Joe Keeslar, two-time Past President of the ABS, who spoke on the past 50 years of bladesmithing in America, beginning with Bill Moran's unveiling of knives featuring Damascus blades at the Knife Makers Guild Show in Kansas City in 1973. Bladesmithing was a dying art in America at that time,

there being fewer than 15 bladesmiths in the country. Moran's act revitalized interest in the art, leading to the founding of the ABS in 1976.



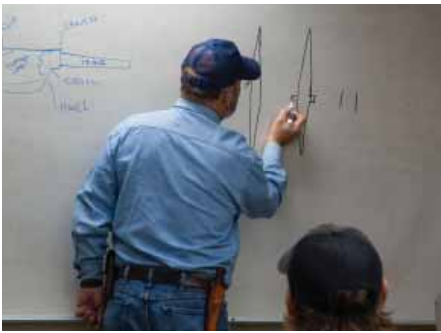
The hammer-in kicked off from 9:00 a.m. to 10:30 a.m. Saturday morning with Demo 1: "Forging a Chef's Knife" by Brion Tomberlin, MS; Demo 2: "Leather Sheaths" by Kenny Rowe; and Demo 3: "Knife Design" by Jim Crowell, MS.

These demos were followed from 10:30 to 12:00 by Demo 1: "Blade Forging" by Jim Crowell MS; Demo 2: "Handles and Guards" by Greg Neely, MS; and Demo 3: "Silver wire inlay" by Billy Hicks.

Saturday Afternoon 1:00 to 2:30 more demos followed: Demo 1: "Handle Techniques" by Mike







Williams, MS; Demo 2: "Pin work on knives" by Greg Neely, MS; and Demo 3: "Silver wire Inlay part two" by Billy Hicks. These

concluded Saturday's activities.

Sunday morning's offerings began at 9:00 a.m. with Demo 1: "Heat Treating" by Greg Neely,



MS; Demo 2: "Machining pocketknife liners" by Don McIntosh, JS; and Demo 3: "Kitchen Knife Design" by Brion Tomberlin, MS.



were followed from 2:30 to 4:00 by: Demo 1: "Ribbon Forge Construction" with Instructor

Don McIntosh, JS; Demo 2: "Blade Finishing" with Brion Tomberlin, MS; and Demo 3: "MS and JS Judging Standards" with Master Smith, Greg Neely and Mike Williams, Instructors.



Demos following the above were: Demo 1: "Blade Grinding" with Jim Crowell, MS; Demo 2: "Leatherwork" by Kenny Rowe; and Demo 3: "Handle techniques, part two" with Mike Williams, MS proceeds.

This activity brought to a close the Fall 2023 Piney Woods Hammer-In at the W. F. Moran School of Bladesmithing.

An auction was conducted by the staff

at 4:00, with the proceeds going to the ABS. Thanks to the zealous bidding of the attendees \$2,985 was raised. This





**Keeslar Award:  
Eric McGright, JS**







**Antique Bowie - Journeyman:  
Mace Vitale**



# CENTRAL STATES HAMMER-IN AND KNIFE SHOW 2023

By Phil Evans

Photos by Phil Evans

Prayers answered! The day was perfect for an outdoor event in the country. The tents were set, tables and chairs for the many vendors, porta-potties in place and, of course, the food trucks were ready to serve the nearly 1500 participants and visitors of the Central States Hammer-In and Knife Show September 9, 2023 at the farm of Phil Evans.



Knife judging would be the first event of the day. The judges were J Neilson, M.S., Brion

Tomberlin, M.S., and Phil Evans, President of the Kansas Custom Knife Makers Association. Lee Parsons won the following three categories: Best Fighter, Best Bowie and the Best Damascus. The Best Camp Knife category was awarded to Dan Peterson, M.S. Jaymes Stevens took home Best EDC. Best Kitchen Knife and Best Folder both went to Colton Kisco. The Best Hunter and Best of Show went to Tad Lynch, M.S.



The cutting competition was an event that drew a large crowd with folks cheering on their favorite competitor. The event was won by Jo Smith. The competition was set up and sponsored by Jo and Chandee Smith.



The first demonstration of the day was given by Tad Lynch, M.S., on forging. Tad is always willing to share his time and talent with others and is an asset to the Central States Hammer-In and Knife Show.

J Neilson, M.S., and Forged in Fire judge, was the next presenter with his canister Damascus demonstration. J was a fan favorite throughout the event. He took time to sign autographs and told some great "behind the scenes" stories that took place in the filming of Forged in Fire.



Brion Tomberlin, M.S. took his turn with a grinding demonstration. Brion showed his impressive grinding techniques on the blade that Tad had forged earlier. He was using the AMERIBRADE grinder that was donated to the show and won by exhibitor Paul Happy.

At the same time as Brion's demonstration, Liz Costa, with Springfield Leather, was showing how to make a sheath. The sheath making was a big hit and a first for the Kansas Hammer-In and Knife Show.





Gary Mulkey, founder of the Branson Hammer-In and Knife Show and host for several years until it morphed into the Central States Hammer-In and Knife Show encompassing Missouri, Kansas, Oklahoma and Arkansas. The show travels from state to state in a rotation. Gary shared his vast knowledge on historical Bowie knives.

The last demonstration of the day was given by Dave Sloan and Doug Klaus from Little Giant Power Hammer. After the demo they were on hand to answer questions concerning maintenance and adjusting Little Giant Power Hammer to make it perform better for you. Sid Suedmeier was also in attendance to share his wealth of knowledge of the power hammer.



The day ended with good byes to old friends and to the new ones made. The feel of the day was one of a family reunion by the exhibitors and of the county fair for those enjoying a warm fall day. Everyone was entertained.

We were honored to have six A.B.S. Mastersmiths in attendance, exhibiting and doing demonstrations. They were Steve Culver, Ray Kirk, Tad Lynch, J



Neilson, Dan Peterson and Brion Tomberlin. All of these gentlemen were happy to share their years of knife making experience with show attendees and exhibitors which helped make the show a big success.



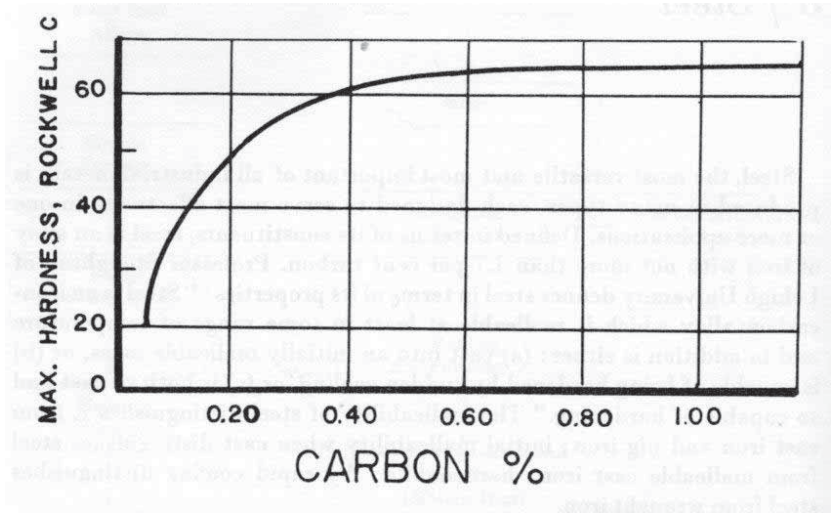
Thank you to the more than sixty exhibitors, vendors, demonstrators, visitors and all who made this event the highlight of our year.



# STEEL

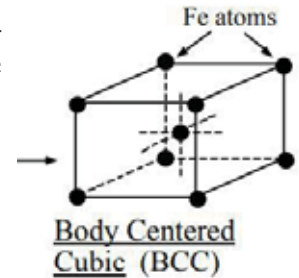
by Dr. James Batson, MS

Steel is an alloy of carbon and iron (Fe). The diagram to the right shows the Maximum Hardness on the Rockwell Hardness C Scale versus the amount of carbon in a knife blade. Thousands of pocketknives have been made yearly with blades made with a Rockwell Hardness of 57-58 on the C scale. So, a blade must have at least 0.40% carbon to be made into a knife. The upper limit of carbon used in knife blades is 1.00% carbon.



To harden the blade to the maximum hardness shown in the chart, you must Austenize the steel blade by raising the temperature of the blade past the critical temperatures and quick cool the blade in a water brine or an oil quench media.

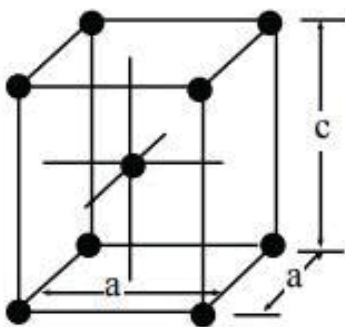
At room temperature, magnetic steel is made up of a matrix of many Body Centered Cubics (BCC). Note the ferric atom in the center of the each cubic.



Upon heating the metal above the critical temperatures, the atomic structure changes to a Face Centered Cubic (FCC) called Austenite that is nonmagnetic. Note the carbon atom in the center of each face.



Names: Austenite or Gamma Iron ( $\gamma$  Fe)

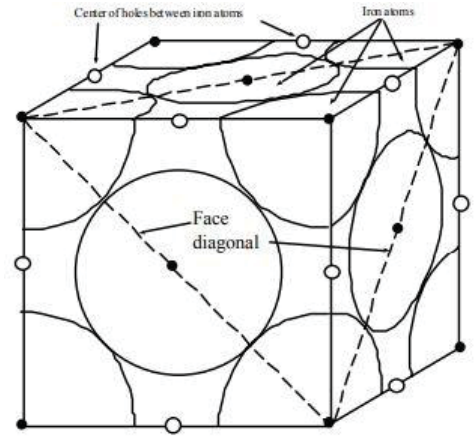


B. C. Tetragonal (Martensite)

To make hard Martensite, you must quench the austenite in oil or brine. This Martensite returns to room temperature as many Body Centered Tetragonals.



The illustration to the right shows the small circles in the voids where carbon atoms reside in the FCC austenite. The more carbon atoms in the austenite the more the distortion and the harder and stronger is the martensite.

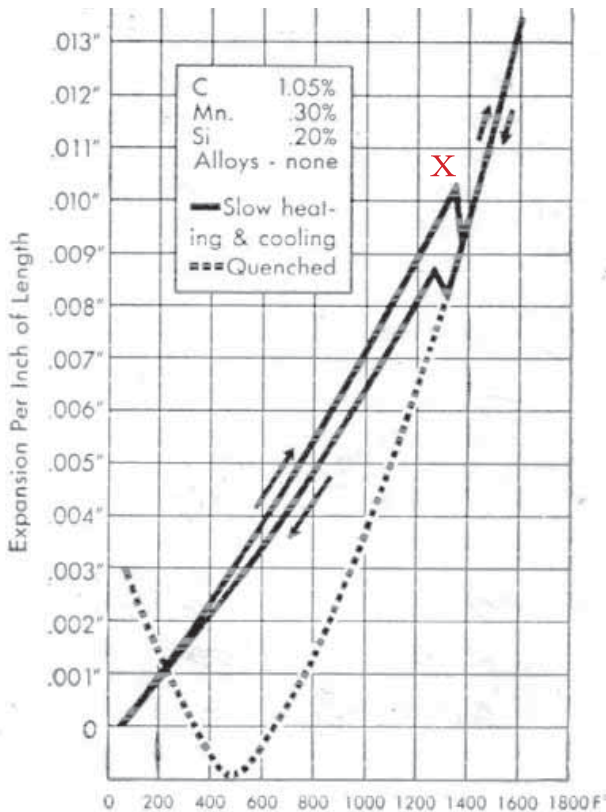


Location of iron atoms in FCC austenite. Small circles locate centers of holes between the iron atoms.

All you need is a magnet to check for austenite. I purchased a small magnet on a telescoping arm. I found the use of the magnet to be cumbersome.

In 1987 Chuck Patrick and I went to the Blade Show in Knoxville, TN. I met Hugh Bartrug and his wife Joyce. Hugh had been a blacksmith for Republic Steel for 25 years. We became good friends. One day he told me to quench the blade after the shadows left the blade. At the time I did

not know what he was talking about. The diagram to the left will reveal what Hugh was telling me.

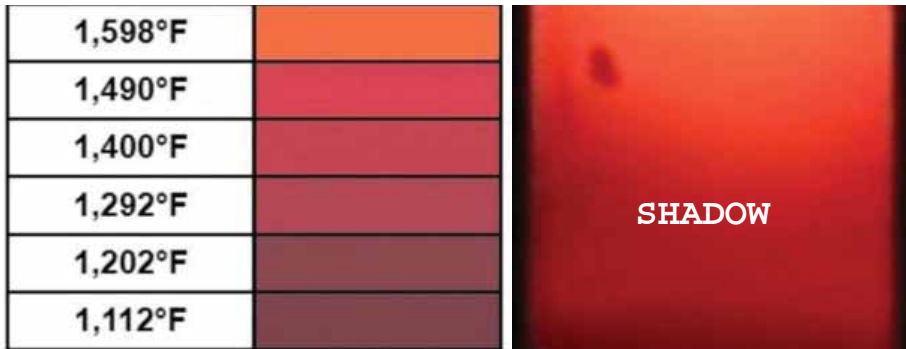


Dilation curve for WATER-HARD tool steel.

When you heat a piece of steel, it gets longer. This is a diagram how the expansion of a steel bar versus temperature when it is subjected to a heat source such as a coal or propane gas forge. If you have a constant heat source the metal expansion will be constant. You will note at point X, the expansion stops. The metal actually contracts a little less than .001 of an inch per length. Thus, creating a shadow in the heated metal.

This energy is being expended internally to change the atomic structure from Body Centered Cubic to a Face Centered Cubic. When the temperature starts to rise, you have Austenitized the metal. You do not have

to hold it for 30 minutes in an electric kiln. You can quench it now. Quenching after the shadow leaves is a much better method than using a magnet. This phenomenon is called decalescence. Always heat treat on a rising temperature.



On the cooling of the metal the FCC transfers to BCC at a lower point due to hysteresis. The second point when it changes back to the BCC atomic status on cooling must give back the energy it acquired during decalescence.

When the FCC returns to the BCC the cooled metal shows an increase in temperature. This increase in temperature in the metal is called Recalescence.

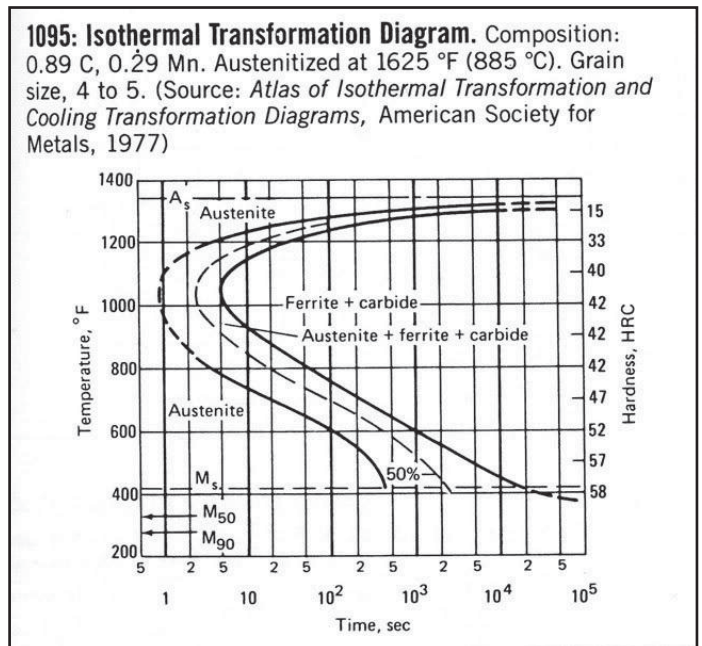
The dotted line is quenched austenite from 1300 degrees F to about 420 degrees F. Martensite is less dense than austenite. So, the Martensite start temperature is 420 degrees F.

Martensite is formed from the quenched austenite on cooling from the Martensite start temperature. The metal has expanded .004 per inch of length during the forming of martensite.

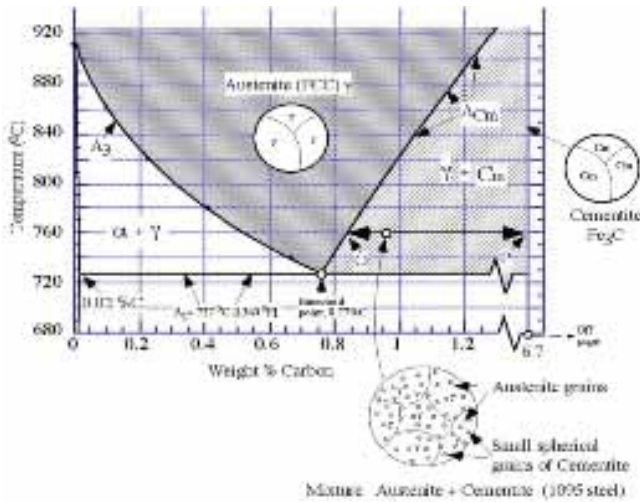
To the right is the Time Temperature Transformation curve for 1095 Steel. To harden all the Austenite into Martensite, one must cool the blade a little less than 1,000 degrees F from the Austenizing temperature in one second.

If it took three seconds to cool past the 1,000-degree F line, only 50% of the Austenite would convert to Martensite.

In the first case when quenched to 1,000 degrees F in one second, the Austenite has not changed to Martensite but has a promise to turn into Martensite. The Martensite start temperature is 420 degrees F. Martensite forms due to a decrease in temperature. At 325 degrees F, 50% of the Martensite forms and at 275 degrees F 90% of the Martensite is formed. Martensite is less dense than Austenite. The internal stress in the Martensite increases with the rate of cooling. If the rate in the quench is too fast, the blade may go TINK and break.



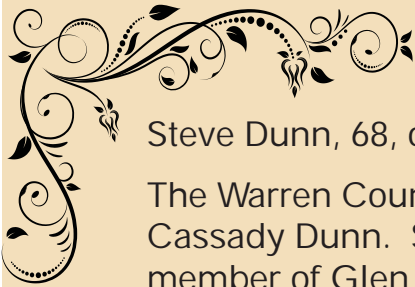




To the left is the IRON (alpha) CARBON PHASE DIAGRAM. For knife steels, we should consider the region between 0.40 to 1% carbon. The Lower Critical Temperature where Austenite starts to form is 1340 degrees F. The two Critical Temperatures where Austenite is made are the A3 and Acm Temperature lines.

Thanks are given to John D Verhoeven for the use of this Phase Diagram and the Center Cubic Diagrams. Every bladesmith needs to study Verhoeven's book entitled "Metallurgy of Steel for Bladesmiths & Others who Heat Treat & Forge Steel."

The Author said "I would like to acknowledge the help of two bladesmiths who have contributed to this book in several ways, Alfred Pendray and Howard Clark. Both men have helped me understand the level of work being done by U.S. bladesmiths."



Steve Dunn, 68, of Smiths Grove died at his residence on May 21, 2024.

The Warren County native was a son of the late Kenneth Dunn and Jewell Cassady Dunn. Steve was a Master Blade Smith and Engraver. He was a member of Glen Lily Baptist Church and Chairman of American Bladesmith Society.

His survivors include a brother, Mike Dunn (Teresa), two nephews, Corey Dunn (Mary Phoenix) and Nicholas Dunn (Shanna), one niece, Julianna Bewley (Chad), and several nieces, nephews and cousins.

There was a memorial service at 1 p.m. Thursday, May 30 at Hardy & Son Funeral Home, Bowling Green Chapel with visitation from 11 a.m.-1 p.m. Cremation was his choice.

In lieu of flowers donations may be made to Clear Fork Baptist Church, 303 Clearfork Church Spur Rd., Rockfield, KY 42274 or you may text to 270-207-9328

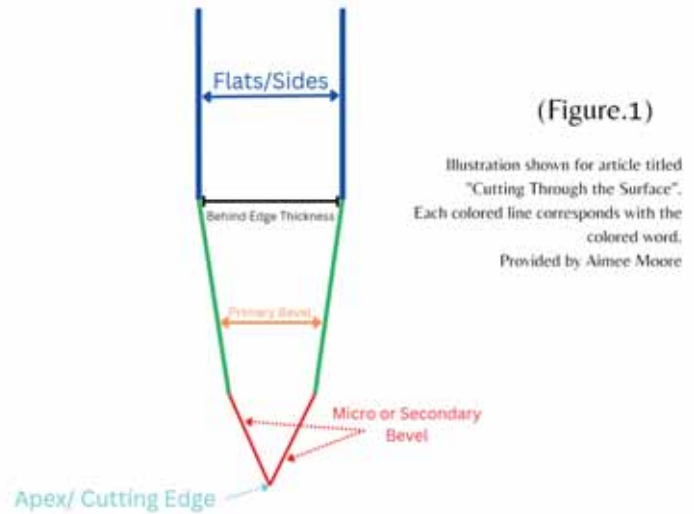


# Cutting Through the Surface

by Aimee Moore

Have you ever wondered how a simple blade can cut effortlessly without an apex on the secondary bevel?

Geometry. High school teachers were right. We'd need it—the structure of the blade denotes the angle degree changes of the blade when creating the bevel or bevels. There isn't a blanket rule in sharpening/grinding your blade. Making modifications early by thinning the primary bevel geometry will make the entire bevel thinner. This thinness is known as behind the edge

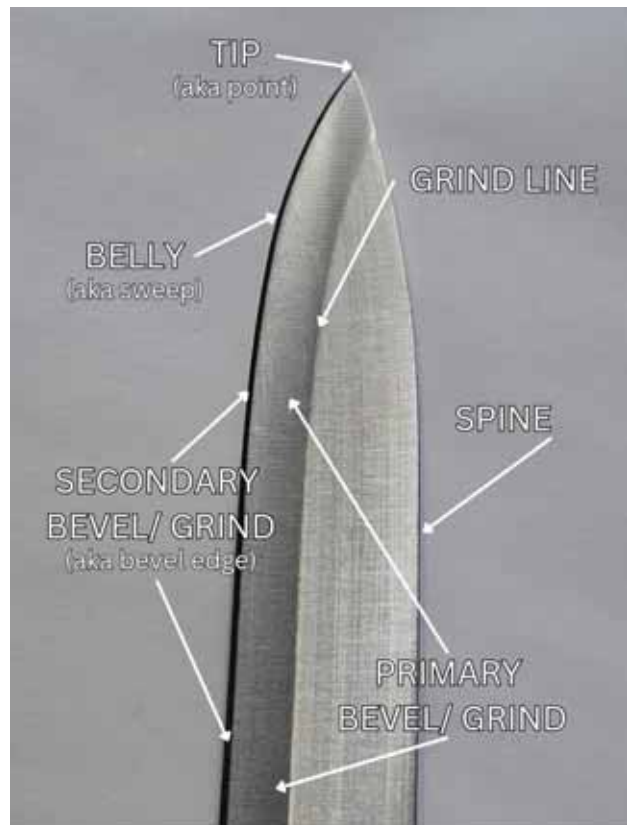


(Figure.2)

Hand forged- primary bevel/ grind- Petty Knife.  
Blade Provided by Scott Moore of SeelenAdler Studios  
Photographed and Illustrated with Permission by Aimee Moore

thickness. This will greatly improve the blade's cutting performance. High-end custom knives focus on this thinness for that razor-sharp feel during use.

Forget about the actual apex of the blade for a moment. I would like to expound on a completely squared-off edge on a blade with a thin primary and moderate secondary

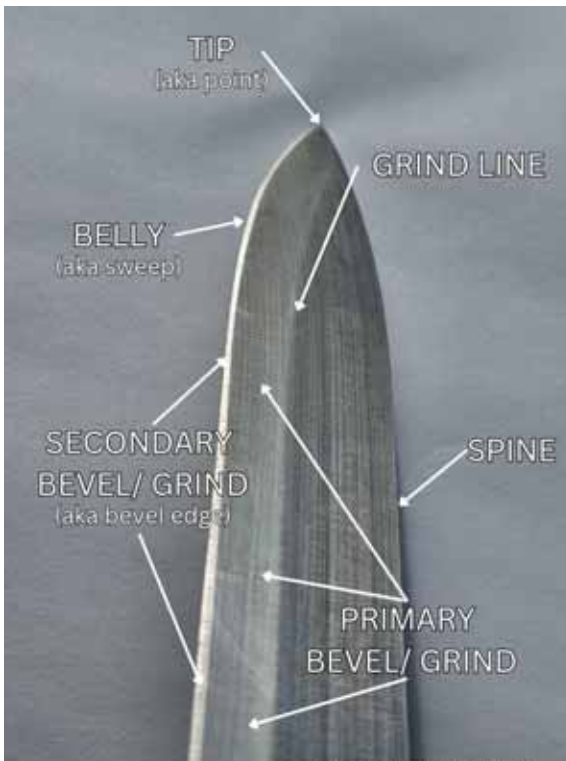


(Figure.3)

Blade shown is store bought & mass produced.  
Has never been sharpened or used.  
Photographed and Illustrated by Aimee Moore

having zero apex, cutting meat and most other food preparation tasks will work well with a primary bevel geometry thinness of less than .009in. While many are content using a squared-off edge for kitchen tasks, keep in mind that secondary bevel apex sharpness is crucial for harder materials like wood, plastics, and hair (as it's often used for testing as its hardness is like that of copper). This is why sharpness tests



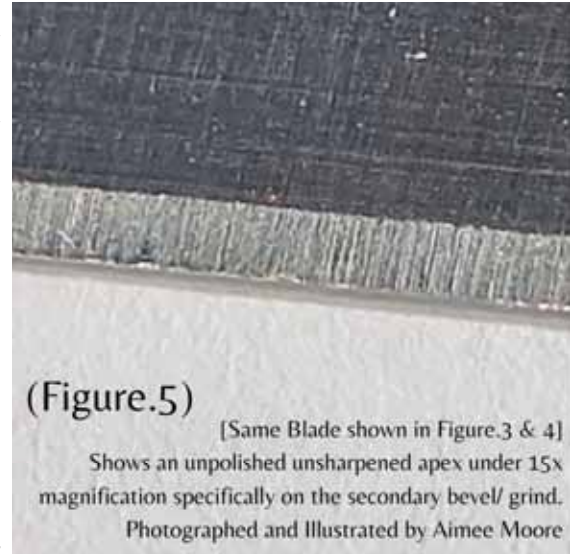


(Figure.4)

[Same Blade shown in Figure.3]  
Different angle of blade shows the grinding/  
machine lines from the factory.  
Photographed and illustrated by Aimee Moore

shouldn't be solely based on paper items; as they only measure apex sharpness, not geometric sharpness as a measure of blade performance.

To put it in perspective, although a blade with thin apex may cut, it doesn't precisely slice paper but rather grinds or shears through it. An unpolished unsharpened apex under magnification may appear jagged, like distant mountains, that may act more like serrations or saw teeth - further assisting the cutting performance.



(Figure.5)

[Same Blade shown in Figure.3 & 4]  
Shows an unpolished unsharpened apex under 15x  
magnification specifically on the secondary bevel/  
grind.  
Photographed and illustrated by Aimee Moore

### A secondary

bevel makes the blade edge stronger for several types of blades. After carefully grinding on a sharpening stone, thinning the secondary bevel is about the angle in which you hold the blade. Tilting the blade in a manner so as not to offset the bevel; an easy method to use is to imagine the stone as a block of butter and filet the top off. One hand direction is not always as strong as the other, so be careful when gliding the

blade across the stone. Thin the bevel too much, and the edge may roll under stress, leading to a rounded edge that no longer cuts.

Achieving the right balance is crucial, emphasizing that behind the edge thickness plays a pivotal role in how the knife performs. It also significantly influences edge retention, raising the question of how long a knife with a zero apex retains its "edge" under normal kitchen use. Having an apex allows for a slice that resembles the blade gliding through water, not clapping against the chopping board.

It's not the edge that makes a knife cut "well", ultimately the behind the edge thickness fights the material- splitting the material, not slicing. Arguably, it matters as much as the edge.



(Figure.6)

[Different angle of blades shown in Figures. 2-5]  
Both blades shown are intended for different uses/ duties in a kitchen.  
Photographed and illustrated by Aimee Moore



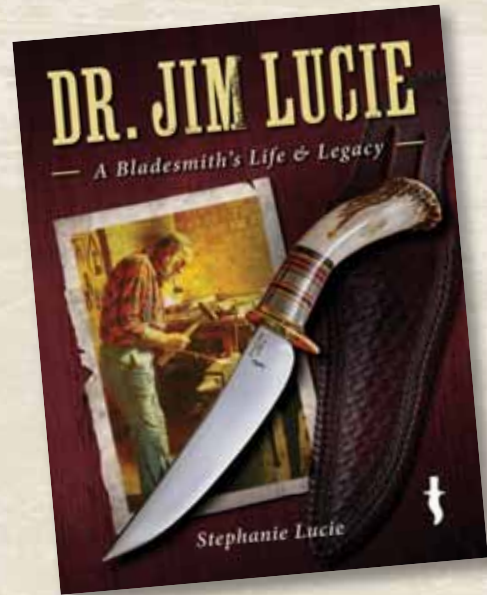
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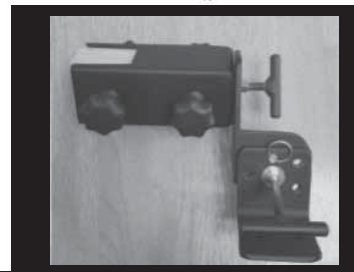
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