

# EUGENE 5160 CLUB ~ DECEMBER 2015

<https://www.facebook.com/5160Club>

newsletter archive: <http://www.elementalforge.com/5160Club/>



## DECEMBER MEETING

December 3<sup>rd</sup> – 6:00pm at David Thompson's shop. If you didn't get the directions in the meeting notice, email me for them: [michael@elementalforge.com](mailto:michael@elementalforge.com).

Bring your share-and-tell!

Note from the Thompsons:  
“Please **drive very slowly** down our lane. The maintenance is all ours. Thanks.”



## NOTES AND REMINDERS

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The **OKCA December show** is next Saturday – December 5<sup>th</sup> – at the Lane Events Center/Wheeler Pavilion (the “circus tent” building). Show hours are 8am-4pm – set up is at 7am. A table goes for \$40. While browsing the December show you can renew your OKCA membership & April show reservations. Details in the November newsletter: [http://www.oregonknifeclub.org/Newsletter\\_1511.pdf](http://www.oregonknifeclub.org/Newsletter_1511.pdf)

**Mini Show:** December 5<sup>th</sup>

**The Big Show:** April 8<sup>th</sup> (members) 9<sup>th</sup>-10<sup>th</sup> (public)

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**Northwest Blacksmith Association** – the following are at the Cowlitz Expo Center – Longview, WA:  
December 12<sup>th</sup> – Power Hammer Certification  
May 13<sup>th</sup> to 15<sup>th</sup> – NWBA Blacksmith Conference  
see <http://blacksmith.org/events/> for details.

Then at Government Camp (Mt. Hood):  
August 18<sup>th</sup> to 21<sup>st</sup> – Blacksmith Week  
see <http://www.cascadiaart.org/> for Government Camp activities.

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The **North West Knife Collectors** and Washington Arms Collectors will have a joint **show in Puyallup, WA** March 19-20 2016. They estimate attendance at over 8,000 according to this table application: [http://elementalforge.com/5160Club/Misc/NWKC\\_WAC\\_Puyallup2016.pdf](http://elementalforge.com/5160Club/Misc/NWKC_WAC_Puyallup2016.pdf)  
Mike Johnston forwarded the application but I could not find a copy on-line – so I've posted the copy (above) to my website.

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**Axe forging** in February in Oakland, CA – among other classes: James Austin was the host of an outstanding gathering I attended a couple of years back. [http://forgedaxes.com/?page\\_id=148](http://forgedaxes.com/?page_id=148)

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## NOVEMBER MEETING NOTES

**DENNIS ELLINGSEN** (OKCA show chairman) was up first up. After noting the December and April OKCA shows, Dennis showed us a Robeson whittler pocket knife and noted his enduring fondness for the style.



With a little prompting Dennis told of how he and fellow knife collector Lloyd Bos had an arrangement to sell a knife like this one back & forth to each after keeping it for awhile. The knife was eventually lost in a field during haying. Dennis watched for another like it for 10 years before finding one on eBay... but

for a high enough price that Lloyd was no longer interested in the buy-sell arrangement!

After Lloyd passed Dennis commemorated his passing by using a whittler pattern knife as the end-mark of every article in the OKCA Knewsletter.

Moving right along to the knife in hand at our 5160 Club meeting – it's another whittler by Robeson that Dennis picked up on eBay. The handle material looked like wood but turned out to be composite. The Robeson patent called it a “thermosetting resin.” After getting some guesses from those present about what we call this material Dennis said “we call it Micarta, but it wasn't called Micarta at that time because Norplex Micarta is a brand name.” So just as we call facial tissue “Kleenex” even if it is not official Kleenex brand from Kimberly-Clark. In the same way we call facial tissue “Kleenex” we call this thermoset resin composite “Micarta.”

*“Micarta” is generally made by layering paper or fabric with thermosetting plastic (some homemade recipes use Bondo or fiberglass resin). The layers can be paper, linen, canvas, etc. Check out YouTube or the knifemaker's forums for instructions. The finished product can have a fine or course pattern depending on what is used for the layering.*

In his line of work Dennis calls on sawmills that use “Micarta” for bandsaw blocks. “The bandsaw can be 10 feet tall – what they do with this is to put it on either side to keep the blade from twisting ... and it wears out after awhile so they take it off and throw it away.”

So Dennis had a bucket of these blocks and a challenge for the knifemakers: “I will give [a “Micarta” block] to a knifemaker if they would like to use this for a handle with the understanding that that knife will be judged at our show in April. The handle will be judged – not the knife – the handle.” And an award to the winner!

Quite a few folks took him up on the challenge and Elaine recorded who's in on the contest.

**MICHAEL KEMP** (that would be me) was up first next. After doing a little coordinating about having a 5160 Club table at the OKCA December and April

shows I opened up my knife roll. I'd brought the first knife I ever made – before I'd gotten a belt grinder – just for “here's where I started out.” Lots of hammer marks and rough edges.



Moving along to what I've been working on lately, I passed around a little kitchen paring knife I made last Summer – 15N20/1095 random Damascus (high layer count, and the oxidizing has worn off – so the Damascus is invisible in this photo) with brass bolster and maple handle.

The upper knife is from last Summer – I was still finishing the lower (stainless) paring knife at the time of the meeting – but it was basically done.



“Before my little heart thingy I was working on a set of stainless knives... using the same set of designs that I've been developing for kitchen knives. I thought: ya know – if I could do these in stainless with a handle that would *survive* the dishwasher, that would be kind of cool – that would be a nicely designed knife that would be practical for most people – because most people are going to throw a kitchen knife in the dishwasher.” <you can imagine the protests from the assembled knifemakers>

After researching home heat-treat stainless I settled on AEB-L (aka 13C26). I had a set of six knives roughed out and ready for heat treat (before my heart

thingy): a paring knife, a couple of utility knives, a couple of chef knives, and a small cleaver. "I had trouble grinding this stuff because it is more plastic than any other steel I've used." It will bend on you just running it back a forth across the belt grinder – so you always have to be re-checking for straightness and re-straightening the blade while grinding.

After I got back on my feet after the heart attack I went to quench them, and they warped like Hell. I didn't even TRY to straighten the cleaver.

And I broke both of the chef knives trying to straighten them (one right out of the quench – the other during tempering). Here's the small cleaver and what's left of one of the chef knives.



You can see some markings on the broken chef knife that are my Rockwell testing.

“Overall my experience with these stainless knives was: ya know – I really like working with Damascus; I really like working with wood; I'm not going to pursue this any further.” Since the meeting I've finished up the paring knife and am sculpting the handles on the two utility knives. We'll keep a utility knife in our kitchen and the other (& paring knife) will go to family members over the holidays.

In the forum postings on AEB-L some folks were quenching in oil (like I did) and some were using aluminum quench plates. They reported getting hardness in the lower 60's Rc – after a sub-zero bath and tempering. What I got was around 56 Rc after the oil – then around 58-60 Rc after the dry ice/denatured alcohol bath – back to 56 Rc after

tempering... which is consistent with other good quality stainless knives we have in our kitchen.

Mike Johnston mentioned the prior Eugene chief of police Thad Buchanan – who is now a knifemaker in Prineville – uses quenching plates. He uses 1” thick plates and just stacks up a bunch at a time: plate/blade/plate/blade/plate... “and he says they all come out just hard as a rock and straight as an arrow.”

Martin Brandt asked “does he quench 'em at all?” Mike: “Nope – just put 'em right on the plates.”

*Here's a long (one hour) YouTube video from USA Knifemaker owner Tracy Mickley on heat treating where he uses quench plates:*

[https://www.youtube.com/watch?v=b9Q\\_AobEfWE](https://www.youtube.com/watch?v=b9Q_AobEfWE)  
*Come to think of it – I should add the USA Knifemaker YouTube channel to the newsletter links!*

I brought in my favorite tools to aid in sanding. The block in a ball vice is great to stick sandpaper on for flat surfaces. Then I have my go-to bits and pieces for curves and corners (the black square is a piece of rubber which I find surprisingly useful to wrap sandpaper around).



In the photo I'm holding a Wayne Goddard style “push stick.”



I also showed the tools I use to finish up the scroll I use on the end of these kitchen knife handles: a small straight chisel and a riffler...



and of course **good lighting** and an OptiVISOR.



And in case you are wondering where I get my Rockwell hardness numbers from, here's the tester I use. You can find it on Amazon by searching for "Rockwell PHR-1". I gather that there are bench Rockwell testers that can be had for a similar amount of money. It was a chunk of change – but I never could get confident using the file-slide test for checking hardness. I get consistent results with this tester – both against the test blocks that came with it and against some blades I have that Wayne Goddard tested and marked for me some years ago.



hammers. From an antique purchased in Paris by his parents to recent finds.



I was asked about the handle material on my stainless knives – I used something from USA Knifemaker called ResinWood. When I did my dishwasher torture tests this stuff came through with flying colors.

In talking about sanding and finishing, Craig Morgan recommended Nick Wheeler's YouTube videos: <https://www.youtube.com/user/NickWheeler33/videos>

Mike Johnston commented that since he started clay backing his blades he has not had any problem with knives warping in the quench. I've posted Mike's notes on clay backing here: <http://www.elementalforge.com/5160Club/MikeJohnstonClayHamon.pdf>



**CRAIG MORGAN** came to the front next to show around his set of chasing and fine detail work

**ERIK LAND** held up a folder blade and declared: "This is a 3 hour and 3 minute failure. It took me 3 hours to grind the blade and get it all fit up – I'm giving away a folder in a knife gift [Knife Dog's Knife-In-A-Hat knife swap] – and I got it all fit up and then started working on the scales ... which was really stupid because I hadn't even heat treated it."



When he remembered to heat treat the Damascus blade and spring it all looked good. Erik finished the scales then started polishing the blade and lo and behold – polishing revealed a crack straight across the blade about an inch from the tip.

"How much do you grind off before you quench?" asked Craig.

"I leave about half a dime on the edge." Eric replied – referring to the edge thickness going into the quench. "And grind it to 220" before and after quenching.

There was discussion about the virtues of hardening a

blade before or after grinding the bevel, especially with a small blade.

“I prefer to grind soft” noted Erik.

He had more of the same billet of Damascus – so he proceeded to make a blade to fit the existing handle and spring. “Making a [folder] blade to fit the spring is a LOT more challenging than making the spring to fit the blade.”

Here's the failed blade – the photo does not show the crack very well – but it's there:



Erik also had some salvaged industrial paper shear blades to give away to anybody who wanted them.

He also brought in a board “filled full of birds eye” that he happened across when buying other lumber – he's going to hack it up and sell it in pieces or as a whole board.

**BLAIR GOODMAN** showed a knife he picked up at a garage sale – marked “Master Barlow” which reminded him of his granddad's knife.



“It only cost me \$275 – but they threw in a drill press, a set of wrenches, some snap-on tools, two dial calipers, two portable sandblasters...”



**CLIFF CHRISTIAN** passed around his work-in-process cable Damascus katana from classes he's been taking at Dragonfly Forge. He also passed around

the wrapped handle he made in an earlier class: <http://dragonflyforge.com/>



Dragonfly Forge is located on the Southern Oregon coast – and Michael and Gabriel Bell are regulars at the April OKCA show.

Cliff talked about the series of classes as well as the steps used in creating a katana in these classes. He fielded numerous questions like “what grit do you grind to?” About 100. “What orientation are you grinding at?” Lock your elbows and sway from side to side against the belt grinder just like a shorter blade. “Do you grind the top of the spine?” No, that's draw filing. “How many hours in the draw filing?” “Seven or eight – we did it in one day... with a standard file. You can use a double cut to take of a lot more meat.”

The habaki was “forged out of electrical bus bar – forged down to shape and then wrap it around – hammer it around the blade then solder it.”



The mention of salvaged copper prompted a warning from Frank Bobbio – salvaged bronze in 1” or 1-1/4” from service panels may contain beryllium, and can cause serious illness from a single exposure to grinding dust.

**DAVE THOMPSON** had a couple of question for us about this carving fork:



First off – how can he tell if the handle is composite or antler (and how to release the epoxy if he decides to re-haft it). And it has a “kickstand” that is not visible in this photo – what the heck is that for?

The guess was that the handle is resin or composite – but a good way to tell is to heat up a small needle and poke it where a pin-prick won't be noticed. If it smells like plastic it's not antler.

As for releasing the epoxy, the best advice was to use a heat gun to heat up the steel – which should heat the epoxy inside the handle and release it.

And the kickstand? It's a pop-up guard in case you need to carve a roast toward your fork hand rather than away from it.

Next up David showed us some modifications he's made to his torch setup to make it more efficient and easier to use. As a metal artist, David racks up a lot of time on the torch!

First off is that his torch stand has a “gas saver” which is a shutoff valve for the oxygen and propane (or acetylene) lines that cuts off the gas when you rest the torch on it. You run a pilot light so you can immediately relight the torch when you pick it up.



The modification David made was to mount the torch next to the pilot light – then put linkage on the shutoff arm to a foot peddle. This way he can adjust the torch for the job, set it in his clamp, and hands-free switch it off and on with the foot peddle.

This photo is a little busy – but hopefully you get the idea. The setup saves gas, time, and lets you use both hands on the work-piece.



Here's a gas saver from Smith Equipment:



**MIKE JOHNSTON** was up next. His first pass-around was a new hardy tool to set his start-of-tang mark:

“I've never been accused of being a welder, but it works really great.”

He made the jaws thicker than his last one (a guillotine style) so that it would make a wider mark on the knife.





Mike also passed around a couple of rough ground blades – one from a Ford coil spring and one from a Dodge coil spring.

Ground to 60 grit – which is what Mike clay hardens at.

“I did some playing with some red ceramic belts and the orange blaze belts. And I can grind 5 knives out of the blaze belts where I can only get 3 out of the red ones.”



He also passed around a small fighter clay hardened and finished to 1000 grit. “That'll end up with a maple burl handle and a stainless S guard and some stainless spacers with some bronze in between.”



Mike noted that he always sands in the same direction. *Some folks (including me) change direction each grit to better see that we are sanding out the last grit's scratches – Mike gets the scratches out going the same direction. You do what works for you – and Mike makes beautiful knives!*

Responding to a question, Mike noted that for 400 grit he likes the “gator” Trizact belts. There is a new ceramic Trizact belt that Frank tried out and it didn't work as well for him as the “gator” version. Mike has tried it too and does not like it either.

The ceramic Trizact also has a pattern to it, but it is glossy and the pattern is not as well defined – and shaped more like a double cut mill file pattern.

*FWIW I'm very fond of the “Gator” Trizact – and have a few of the new ceramic Trizact and am not happy with it either.*

Here's what the good “gator” Trizact looks like:



**FRANK BOBBIO** brought in an example of the RR spike knives he makes. “All I've made is a number of these in the last couple months.”



“You can see the hamon line I can get to pop up on there. I get lots of guys saying [about RR spike knives] that it's a letter opener, it's not a real knife and you shouldn't be selling it as a knife [because of lower carbon content]. But I get the edge pretty hard ... but I was thinking ... I've done a little testing ... how about somebody brings in a Buck knife and I'll bring in one of my RR spike knives and some hemp rope and we'll test 'em!”

Mike asked “are you still quenching these in Super Quench?” “Yes” Frank said.

*My understanding is that Super Quench is a homebrew super fast quench made from:*

*5 gallons water*

*5 lbs salt*

*28oz bottle of Dawn blue dish washing detergent*

*8oz bottle of JetDry or other rinse aid*

“And that's without putting clay on it or anything” Frank noted. “And for 1035 you've got 3/4 second to get around the nose ... so by the time you pull a

blade out of the forge and get it to the quench you've already lost the battle. So after doing a couple hundred of these – the Super Quench is the key – but I use a torch and I have the knife in vice grips and I kneel down and I'm heating it 6 inches over the quench tank ... then you're fast enough and it works.”

*The “nose” that Frank is referring to is in the phase diagram sometimes called the TTT (time temp transformation) graph. There's a bulge in the phase change lines that looks like a fat nose – and you have to cool steel fast enough to miss the tip of the nose if you are going for martensite. Here's my notes on it – with a TTT graph near the end:*

*[http://elementalforge.com/tips\\_notes/?page\\_id=87](http://elementalforge.com/tips_notes/?page_id=87)*

Walter Hardcastle mentioned he really likes the forged doorbell plates that Frank has been making (see Frank's etsy.com store here: <https://www.etsy.com/shop/BobbioForge>).

“We're working on the house and the wife says she's going to buy a doorbell plate and I'm looking at 'em and they're just sheet metal so I say I'll forge one. So I went ahead and forged a dozen” and Frank added that he's making belt buckles – including some with an anvil. “I have a small CNC machine that's been sitting for a year and I've just got it back together...” to be used in cutting out anvil profiles etc. An Frank is having fun <cough><cough> learning the programming involved to make the CNC work right.



Frank did a test on a myrtlewood board for various finishes. All are done with three coats.



He also tried a couple of finishes on a piece of snakewood – it has an untreated spot in the middle with coconut oil on one side and Minwax antique oil on the other side.



There was some discussion of LED flashlights and LED work lights. We broke up into informal discussions and the meeting wound down for the evening.

Keep Well! (the alternative sucks)

~ ~ ~ Michael Kemp



## FREE DE-CLASSIFIEDS (IN NO PARTICULAR ORDER)

Email me a brief description of what you are selling/buying/looking for with your preferred contact (phone/email/...). Unless you let me know you want a shorter run, I'll run the note for 3 months and then send you an email to see if it's still valid. It's free – email me at [Michael@ElementalForge.com](mailto:Michael@ElementalForge.com)

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Ken Olson is looking for someone who would be interested in building him a set of six woodcarving knives, steel only, 4” handle with a rectangular shaped opening in the handle with a 1/4” steel border, 2” blades of various shapes. Ken has specific dimensions. Contact Ken at 541 935-1182 or [olson@bossig.com](mailto:olson@bossig.com)



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Eric Bergland is selling:

- 6X36 belt/disc grinder \$40
- 10' DRILLPRESS (never used, just assembled) \$70
- Antique coal forge \$50
- Antique pedal grinder \$30.

Blue River – 541 912-4906



## WEBSITE LINKS

### 5160 CLUB

5160 Club Newsletters are archived at:  
<http://www.elementalforge.com/5160Club/>

Hint: to Google the archive for a specific knife style or presenter name, use a search like this:

**sami site:**<http://www.elementalforge.com/5160Club>  
or this:

**ron lake site:**<http://www.elementalforge.com/5160Club>

### OREGON KNIFE COLLECTORS ASSOCIATION (OKCA)

The OKCA hosts monthly dinner meetings where you are guaranteed to see treasures from the wide world of “things that go cut!” OKCA also puts on the big knife show in April – if you haven't seen it you've been missing something special!

<http://www.oregonknifeclub.org/index.html>

Go to the “Knewsletter” link and scan a recent newsletter for a membership form and contact info.

## FORUMS

Bladesmith's Forum aka Don Fogg Forum  
<http://www.bladesmithsforum.com/>

Knifedogs Forum (USA Knifemaker)  
<http://knifedogs.com/forum.php>

American Bladesmith Society  
<http://www.americanbladesmith.com/ipboard/>

Usual Suspects Network  
<http://www.usualsuspect.net/forums/forum.php>

Blade Forums  
<http://www.bladeforums.com/forums/forum.php>

Julious Griffith – one of our regulars – has a number of Facebook groups designed to help knifemakers and collectors – search Facebook for:

- Custom Knives For Sale by Maker - Available now
- Knifemaking - Works in Progress (w.i.p.'s)
- Knifemaking Equipment Buy, Sell, or Trade (used only)
- Knifemaking - Masters to paying Students connection
- Knife shop photos
- Knife Calendar - Events, shows, hammer-ins, schools, misc.

These are all closed groups – to keep them focused – so if you want to join one of the groups, click the “+ Join Group” button and also message Julious and give him some info on yourself so he knows you have real interest in the group.

## REFERENCES

Many of the sites linked under “Knife Maker General” have book & video sections as well.

Our own Wayne Goddard's books are available at Amazon:  
<http://www.amazon.com/Wayne-Goddard/e/B001JS9M10>  
And you can email Wayne directly for his DVD at [wgoddard44@comcast.net](mailto:wgoddard44@comcast.net)

Verhoeven's Metallurgy For Bladesmiths PDF  
<http://www.feine-klingen.de/PDFs/verhoeven.pdf>

Verhoeven's updated book:

<http://www.amazon.com/Steel-Metallurgy-Non-Metallurgist-J-Verhoeven/dp/0871708582>

ZKnives – Knife steel composition/comparison/etc.

<http://zknives.com/knives/steels>

Kevin Cashen's Bladesmithing Info

<http://www.cashenblades.com/info.html>

Tempil Basic Guide to Ferrous Metallurgy

[http://www.tempil.com/wp-content/plugins/download-monitor/download.php?id=Basic\\_Guide\\_to\\_Ferrous\\_2010.pdf](http://www.tempil.com/wp-content/plugins/download-monitor/download.php?id=Basic_Guide_to_Ferrous_2010.pdf)

My “Knife Info” has some knife musings and cheat sheet charts – plus Oregon and Eugene knife laws:

[http://elementalforge.com/tips\\_notes/](http://elementalforge.com/tips_notes/)

## **CLASSES FOR KNIFE MAKING, ETC.**

Gene Martin offers personal instruction at his shop south of Grants Pass for a daily rate.

<http://www.customknife.com/>

Michael and Gabriel Bell of Dragonfly Forge offer a constant series of small group classes in Japanese style sword forging and fittings. Located on the southern Oregon Coast.

<http://dragonflyforge.com/>

Murray Carter offers small group classes in a variety of subjects, primarily focused on traditional Japanese cutlery. Located in Hillsboro.

<http://www.cartercutlery.com/bladesmithing-courses/>

David Lisch is a ABS Master Smith who teaches classes in Seattle. I've heard rave reviews from his students. Lisch is very skilled at blacksmithing in general and bladesmithing in particular.

<http://www.davidlisch.com/Learn.html>

Speaking of the ABS (American Bladesmith Society) – if you are up for traveling across the country to take classes, check out their “Schools” link:

<http://www.americanbladesmith.com/>

James Austin offers forging classes in Oakland, CA – axes, tongs, viking anvil, etc.:

[http://forgedaxes.com/?page\\_id=148](http://forgedaxes.com/?page_id=148)

Blacksmithing and some bladesmithing workshops are hosted regularly by the Northwest Blacksmith Association: <http://blacksmith.org/>

USA Knifemaker has a lot of fun & informative videos on their YouTube channel:

<https://www.youtube.com/user/USAKnifemaker/videos> ... and hey - “free” is a hard price to beat!

Nick Wheeler also has a good YouTube channel with a lot of how-to videos:

<https://www.youtube.com/user/NickWheeler33/videos>

## **GENERAL TOOLS & SUPPLIES**

Woodcraft of Eugene – thanks to Joe & the crew for six years of hosting 5160 Club meetings – we've had to move on, but the hospitality was appreciated.

<http://www.woodcraft.com/stores/store.aspx?id=515>

MSC Direct

<http://www.mscdirect.com/>

McMaster-Carr

<http://www.mcmaster.com>

Grainger

<http://www.grainger.com>

Surplus Center

<http://www.surpluscenter.com/>

Victor Machinery Exchange

<http://www.victornet.com/>

## **KNIFE MAKER GENERAL**

Knife kits, steel, tools, machines, supplies such as handle material, fasteners, belts, glues, finishes, etc.

Jantz Supply  
<http://www.knifemaking.com>

Texas Knifemaker's Supply  
<http://www.texasknife.com>

USA Knife Maker's Supply  
<http://www.usaknifemaker.com/>

Knife and Gun (K&G)  
<http://www.knifeandgun.com/>

Alpha Knife Supply  
<http://www.alphaknifesupply.com/>  
True Grit  
<http://www.trugrit.com>

## **KNIFE STEEL SOURCES**

New Jersey Steel Baron  
<http://newjerseysteelbaron.com/>

Kelly Cupples (High Temp Tools) – Alabama  
<http://www.hightemptools.com/steel.html>

Niagara Specialty Metals – New York  
<http://www.nsm-ny.com> (click Products/Knife Steels)

SB Specialty Metals – New York & Texas  
<http://shop.sbsm.com/>

Bohler Uddeholm – numerous U.S. locations  
<http://www.bucorp.com/knives.htm>

Sandvic – stainless steels – Texas & Pennsylvania  
<http://www.smt.sandvik.com/en/products/strip-steel/strip-products/knife-steel/sandvik-knife-steels/>

Pacific Machinery & Tool Steel – Portland, Oregon  
<http://www.pmtsco.com/tool-die-steel.php>

## **EQUIPMENT**

Beaumont (KMG) [Ohio] – the industry's benchmark 2x72 belt grinder  
<http://www.beaumontmetalworks.com/shop/>

Travis Wuertz [Arizona] – premium versatile grinder  
[http://www.twuertz.com/Home\\_Page.php](http://www.twuertz.com/Home_Page.php)

Pheer [Gresham, Oregon] – affordable grinder made in Oregon  
<http://www.2x72beltgrinder.com>

AMK [Ohio] – affordable grinder, quick-change between platen & contact wheel  
<http://amktactical.com/>

Coote [Port Ludlow, Washington] – affordable, simple grinder – you supply the motor  
<http://www.cootebeltgrinder.com>

Marinus Kuyl [Hillsboro, Oregon] – another affordable grinder made in Oregon – and parts – you provide the motor.  
<http://oregonblademaker.com>

Grinder-In-A-Box – grinder kit, assembly required  
[http://www.polarbearforge.com/grinder\\_kit.html](http://www.polarbearforge.com/grinder_kit.html)

Wayne Coe [Tennessee] – grinders, motors, VFDs...  
<http://www.waynecoeartistblacksmith.com>

Contact Rubber Corp – wheels etc.  
<http://contactrubber.com/contact-wheels.asp>

Sunray – drive wheels  
<http://www.sunray-inc.com/drive-wheels/>

Quick and Dirty Tool Co. [Auburn, Washington] - will build Spencer/Clontz style tire hammers  
<https://www.facebook.com/QDTool>

Renaissance Metal Art [Mulino, Oregon] – 80# ram air hammer  
<http://www.rmetalart.com/tools.htm>

Anyang [Texas] – air hammers from 20# to 165#  
<http://www.anyangusa.net/>

Meyer Machine Tool [Ohio] – treadle hammer  
<http://www.meyermachinetool.com/Blacksmith-div-.html>

Spencer/Clontz tire hammer plans/workshops  
[http://www.alaforge.org/Trading\\_Post.html](http://www.alaforge.org/Trading_Post.html)

Appalachian Power Hammer plans  
<http://www.appaltree.net/rusty/index.htm>

## **FORGE & REFRACTORY**

Chile Forge  
<http://www.chileforge.com/>

Mankel Forge  
<http://mankelforge.com/forges.html>

High Temp Tools (scroll down the page for the category buttons)  
<http://www.hightemptools.com/supplies-mainpage.html>

Omega – thermocouples & measuring equipment  
<http://www.omega.com/>

Auber – more thermocouples and controllers, etc.  
<http://www.auberins.com>

Hybridburners – home of the venturi T-Rex  
<http://www.hybridburners.com/>

Pine Ridge Burners – for ribbon burners and all associated fittings, blowers, valves, etc.  
<http://www.pineridgeburner.com>

Zoeller Forge – low cost venturi & parts: Z Burners  
<http://zoellerforge.com/>

Here's the original article on making a ribbon burners that John Emmerling wrote back in 2005 for the NWBA Newsletter:  
<http://blacksmith.org/2005-1-hot-iron-news/>  
You can download the PDF from that site. John's article starts on page 11.

## **BLACKSMITH**

Blacksmith Depot  
<http://www.blacksmithsdepot.com>

Pieh Tool  
<http://www.piehtoolco.com>

Centaur Forge  
<http://www.centaurforge.com>

Quick and Dirty Tool Co.  
<https://www.facebook.com/QDTool>

## **LOGO/ETCHING**

Ernie Grospitch – Blue Lightning Stencil  
<http://www.erniesknives.com/>

IMG International Marking Group  
<http://img-electromark.com/>

Electro-Chem Etch  
<http://www.ecemmi.com/products.html>

## **WOOD SUPPLIERS**

Burl Source – handle blocks/scales – So. Oregon  
<http://www.burlsales.com/>

Shelton Pacific – stabilized wood – Shelton, WA  
<http://stores.sheltonpacific.com/>

Gilmer Wood – N.W. Portland  
<https://www.gilmerwood.com/>

North Woods Figured Wood – Gaston, OR  
<http://www.nwfiguredwoods.com/>

## OTHER GOODIES

Sally Martin Mosaic Pins – So. Oregon  
<http://customknife.com/index.php?cPath=13>

Oregon Leather – 810 Conger Eugene and 110 N.W.  
2ND Portland  
<http://www.oregonleatherco.com/>

Coyote Steel – misc., scrap, copper, brass, bronze –  
Garfield & Cross St. Eugene  
<http://www.coyotesteel.com>

Cherry City Metals – Salem, Oregon – metal  
recycling and useful objects  
<http://www.cherrycitymetals.com/>

Amtek – tool steel & cutting tools  
<http://websales.amtektool.com>

Rio Grande – jewelry tools/supplies  
<http://www.riogrande.com>

Otto Frei – jewelry tools/supplies  
<http://www.ottofrei.com>

M3 Composite – space age mokume & other  
<http://www.m3composite.com/>

Minarik automation & control  
<http://www.minarik.com/>

There's a new set of epoxies made specifically for  
bladesmiths, created by a man with a decade of  
experience in making fishing rod adhesives.  
<http://www.bladebond.com/Products.html>  
If you try some of this stuff, I'd love to know which  
product you tried and how you liked it!

Valley Stainless (that does water-jet cutting) is one of  
Craig Morgan's customers. They told Craig “bring in  
a pattern” and they'd work with you on small batch  
cutting. They don't have a website yet. 29884 E Enid  
Rd Eugene, Oregon 97402 (541) 686-4600.